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Names of ships should be underlined to denote *italics*, and not written within inverted commas.

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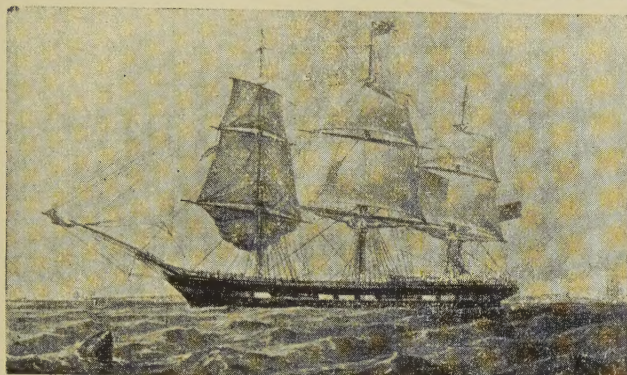
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(Frontispiece)

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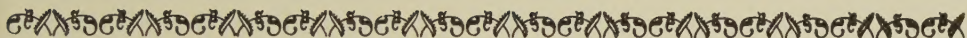
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ART, CRAFT & MYSTERY

*after the manner of their
use in all ages and
among all
Nations*



VOL. 46. No. 4

1960



THE SPRIT-RIG IN THE ANCIENT WORLD

By Lionel Casson

IN my article 'Fore-and-Aft Sails in the Ancient World' (*The Mariner's Mirror*, 42 [1956], 3-5; see also Bowen's additions, 43 [1957], 160-4) I pointed out that, contrary to general belief, the fore-and-aft rig was known at least as far back as Roman imperial times. The examples I presented—one stone relief showing a lugsail and four showing spritsails—all belonged to the second and third centuries A.D.

I now have an important fresh piece of evidence to offer, one that enables us to push the date of the spritsail back at least three centuries, into Greek times. In the archaeological museum of Thasos, the large island in the north Aegean, is a relief (Frontispiece) showing a sprit-rigged craft: a young nude sailor is standing on its deck struggling to push the heavy sprit erect against the mast stepped far in the bows. The only way to date the piece is by style and workmanship, but these reveal it to be unquestionably a Greek work of the Hellenistic age, in all probability of the second century B.C.

Of the five examples of sprit-rigs that we now have, four come from the northernmost Aegean: one from Thessalonica, this new one from Thasos, and two from near the mouth of the Dardanelles. Very likely this narrow geographical range is mere coincidence. Yet there is always the possibility that it is more than that: the sprit-rig may have been a favourite with the sailors of these waters; they may even have invented it.

EARLY TUDOR SHIP-GUNS

By the late L. G. Carr Laughton

EDITED BY MICHAEL LEWIS

[Introductory Note]

IT is never easy to edit the unfinished work of another, particularly of so meticulous and skilled an investigator as the late Mr Carr Laughton. But the work here transcribed is such an important one, and at the same time it was left by him in such an unfinished state, that it seems necessary, at the outset, to record just what I found, and how I have tried to reproduce it, in readable form, along such lines as, I trust, would have satisfied so careful and scholarly an author. But I am none too confident—he was never satisfied with his own work. How then can another hope to do as well, let alone better?

The manuscript, as it reached me, is written on the right-hand pages of three small notebooks. It evidently represents a definite draft for a paper. It is very clearly written, and has few corrections in it. Had this been all, the editor's task would have been simple indeed. But it was not nearly all. The left-hand pages contain a remarkable variety of matter, all of later date than the right-hand draft. Apart from writings in other hands—the observations of friends to whom he submitted it—I detect at least four stages of revision; the three earlier ones in ink, though 'later' ink than that used in the draft itself; and the fourth in pencil. Internal evidence seems to show that the whole ranges in time from 1933 or 1934, when the draft was written, to not earlier than 1945, when the last pencil notes were made.

Even this is not all, however. The left-hand matter (or most of it) can be divided under two broad heads—(1) Passages written out fair and in full, and evidently intended to be inserted in the draft as they stand. Often indeed, but not always, the precise spot for the insertion is indicated in the draft. Under this heading, too, come a number of passages written in notebook form, in L.G.C.L.'s characteristic abbreviations. Most of these also, I think, he intended to write up, and insert in the main text; and I have incorporated them when possible. (2) But, as well as these, there are many observations, in his own hand, sometimes answering his friends' remarks, refuting them sometimes, occasionally accepting them. More often, however, the observations consist of a sort of running commen-

tary, still in his own hand, criticizing his own draft and querying its content. These are then, often, followed by revisions of his text in the light of his own queries and criticisms: followed, sometimes, by further criticisms of his new revisions, leading to further revisions—and further queries. This is so characteristic of the man—a perfectionist if ever there was one, a true scholar to whom nothing but the ultimate truth appealed.

To have transcribed everything in the notebook *verbatim* would have been grossly unfair to him, and fatal to all clarity. Clearly he never intended it. Besides, I know (and sympathize with) the cold glint that steals into any responsible editor's eye when he is faced with a text which is considerably more than half notes! So I have compromised, and, whenever possible, incorporated the contents of the left-hand pages into the right-hand draft: though of course, in honour bound, I have been very careful to keep to L.G.C.L.'s exact wording, save only where I have expanded his abbreviations and, occasionally, added a joining 'and' or 'but'. I had to guess the correct place for a few of the insertions: but, usually, the sense gave the necessary guidance. Where I was not sure to the last, I have noted the fact, in square brackets.

Our author's notes, some of which remain obstinately unavoidable, are those given without any brackets at all, though ordinary brackets may appear in the course of them. Throughout the article, square brackets indicate editorial incursions. Everything inside them is mine: everything else is L.G.C.L.'s.

MICHAEL LEWIS

Nearly 40 years ago¹ Mr Oppenheim described the gun armaments of the ships of the opening years of the reign of Henry VIII (*Administration of the Royal Navy*, pp. 54–6), and at the same time, by editing for the Navy Record Society the inventories of the ships of Henry VII (*N.R.S.*, Vol. VIII, 1896), made it possible to form some opinion as to the nature of the changes which were taking place in that reign. The information collected in these books, and the inferences made from it by their author, have held the field ever since. This is the less remarkable because, shortly afterwards, Sir Julian Corbett in his *Drake and the Tudor Navy* (Vol. I, pp. 26 *seq.*, 379 *seqq.*), in such space as he could spare for a consideration of the guns of the beginning of the Tudor period, adopted, or arrived independently at, the same conclusions.

Those who have discussed the subject more recently, especially Eng. Commander F. L. Robertson (*M.M.*, Vol. IX, p. 173, and in his *Evolution*

1 [Now 64 years.]

of *Naval Armament*, 1921), have taken their departure from Oppenheim and Corbett, even where the result of their own searches contained matter which might have justified their subjecting the conclusions of those authors to critical revision.¹ Although there is a great deal of documentary evidence concerning both the manufacture of guns in this period, and their distribution on board ship, hardly any of it has been made available: indeed at present the important return made by Cornelis Johnson in 1513, contributed to the *Mariner's Mirror* (Vol. XIII, p. 368) by Major Evan Fyers, stands almost alone.² With the exception of those named we have had no technical papers illustrative of the beginning of naval gunnery, which extended to about 1530, or perhaps a few years later.

The rearmament of the royal ships which was taken in hand in the 1530's has hitherto been, and probably will continue to be, regarded as having opened a new period, in which standardization began to take the place of unlimited experiment. The rearmament indeed proceeded from so true an appreciation of the experience of the earlier period, that it struck out the line along which evolution has taken place ever since. It may be, however, that closer enquiry will show that, quantitatively, there was less difference between the gun armaments of 1515 and of 1540 than has generally been supposed.

The purpose of this paper is to examine, by the light both of the old and of some new evidence, the nature and distribution of the guns used between 1485 and 1515 on board ship.³ The year 1515 affords, for the moment, a convenient halting place, because, owing to the stock-taking which immediately followed the war of 1512-14, it offers good evidence; also because by then the tendencies with which the reign opened had made their mark. The 20 years between this date and the period of rearmament may be left for future treatment, when the records have been further searched. It is now possible to say little more concerning them than that the process of experiment and evolution continued, and that at the end of the period the list of naval guns apparently contained several new types. How far these were really new, and how far they represented old types under new names, is one of the points to be determined.

The documentary evidence for the reign of Henry VII is not very precise. At the beginning of the reign, indeed, for the ships which the

1 Add foulkes. [*The Gunfounders of England*, by Charles foulkes, 1937.]

2 Tout in *English Historical Review*, and others for pre-Tudor guns.

3 [This is characteristically modest. Neither Oppenheim nor Corbett did more than scratch the surface of the problem, especially as regards the siting of the guns on board. Though our author used their findings, his paper is in fact the first to make anything like a full-scale attempt to answer these questions.]

King had inherited (or won with the Crown), it may be described as meagre; for though the number of guns and gun-chambers¹ is set down for each ship, yet the types are not differentiated, all being described by the generic name of 'gun', and there is no mention of where they were mounted. There are, however, some useful indications; which incidentally are fewer than they might have been, because most of the ships, when the survey was taken, had no powder or shot on board. Still, one ship, the *Martin Garsia*, apparently one of the smallest, had '100 gun stones and 40 hail shot'; and another, the *Governor*, a bigger ship, had 200 'gun stones' and also eight 'gun picks'. There is value in these entries, for they show that the armament of the ships did not consist, exclusively, as some have supposed, of small 'serpentes'.² By itself, the term 'gun stones' is not conclusive, for until well into the next reign any shot, whether of stone or iron or lead, might be so called: but when a ship has eight 'gun picks', as the *Governor* had, it is clear that a considerable number of her guns must have been 'stone guns'.² It is perhaps curious that none of the guns in the ships of 1485 are described as 'serpentes', of which almost certainly a large number must have been present; but in the early part of the *Accounts and Inventories*³ there is only one mention of 'serpentes', of which eight were bought by the Clerk of the Ships and delivered to the Captain of the Isle of Wight. These were undoubtedly small guns, for they cost no more than 20s. each.

As to the ships, there is no reason to doubt that in 1485, and for some time before, they carried an armament of comparatively heavy guns in the waist. In default of inventories, there is pictorial evidence of this: for example, some of the ships in the Rous roll, and the ships of 1482 reproduced by de la Roncière (Vol. II, p. 496). This latter indeed shows the tier of guns in the waist extended both forward and aft, under the fore and after castles, thus making a complete upper deck of what seem to be heavy guns; but as the artist has also armed the forecastle itself with similar guns, it may be thought that in this he has gone too far, and has thereby impaired the value of his evidence. Still it may be accepted that in the 1480's the normal armament of a man-of-war consisted of a number of relatively heavy guns in the waist, with others, not necessarily all very small, on two decks in both castles.

¹ [The 'chamber' of practically all the guns of this period, whether 'built-up' or (if they existed) cast, was a part quite separate from the 'hall'—the 'chase' or barrel—and was used to contain the charge.]

² [The author defines and discusses 'serpentes' and 'stone guns' later (pp. 272, 266). Here he may be read to mean little more than 'small' and 'large' guns.]

³ [That is, Oppenheim's Vol. VIII, *N.R.S.*]

The inventories show that in 1485 the *Grace Dieu* had 22 guns, with 89 chambers; the *Mary of the Tower* 58, with 140 chambers; and the *Governor* 70, with 265 chambers. We have no statement as to the size of these ships, but as some of the gear of the *Mary* was later transferred to the *Sovereign*, and the sheet cables of the two ships were of about the same size, we should probably not be far wrong in deciding that the *Mary* was of about 600 tons. The *Governor* may have been about the same size; and the *Grace Dieu* is also believed to have been large, the small number of guns appearing in her inventory being accounted for by the fact that the ship was in effect cast from the service when it was taken, and had already been partly stripped of her gear and armament.

Though the available inventories of the *Regent* and *Sovereign* date from 1495, both ships were built some seven or eight years before. These ships seem to have been of about 900 and 600 tons.¹ The *Sovereign* certainly had above her upper deck aft only a half deck and a poop carrying guns, and only one raised deck in the forecastle (*Acc. and Inv.*, pp. 176, 216-17). The distribution of guns in the *Regent* is not given, but her decks seem to have been the same as in the *Sovereign* (*ibid.* p. 227). Thus, save for the fact that they had no guns on the lower deck, these ships distributed their armament exactly as did the line of battle-ships of the eighteenth century.

It will be noticed that in this description I have used the later, and more familiar, names of the decks: but in contemporary papers the lower deck is the 'overlop'; the upper deck is divided into 'in the forecastle aloft', 'the waist', and 'in the summer castle'; the forecastle is 'the forecastle above the deck'; the half-deck is 'the deck over the summer castle'; and the poop has its modern name. There may, in at least some ships, have been a break in the upper deck at the after end of the waist: there is nothing in the inventories bearing on this point, and in any case the distribution of the armament is not affected.

For the year 1495 we have the armament of the *Regent* and the *Sovereign*, which show that, in the course of 10 years or less, there had been an enormous increase in the number of guns carried. The *Regent* had as many as 225, all described as serpentines: the *Sovereign* had 141, of which 110 were serpentines and the rest stone guns. The *Regent*'s armament, unfortunately, is treated perfunctorily, and no distribution of it is given: for the *Sovereign*, however, the information (*Acc. and Inv.*, pp. 216-17) is precise enough. She had no less than 76 guns on her upper deck, distributed thus: In the waist, 20 stone-guns; in the summer castle, 11 stone-guns and 21 serpentines; under the forecastle, 24 serpentines. On the 'deck over the summer castle'

¹ In 1525 the *Sovereign* is described as of 800 tons—*L. & P.*, Vol. iv, p. 1, 1714 (3), N 20/48 b. [Letters and Papers of the Reign of Henry VIII.]

(i.e. the half deck) she had 25 serpentines; on the poop, 20 serpentines, and on the forecastle 16 serpentines.¹ In the stern there were four serpentines, probably two each to the summer castle and to the deck over it. Also it may be inferred, from later practice, that on each deck some of the guns were mounted in the bulkheads so as to command the waist. From the small number of guns mounted 'in the deck over the summer castle' it may be inferred that the cabins of the principal officers were on that deck.

From the mere number of the guns in these two ships it is evident that many of them must have been small. Mr Oppenheim (*Admin.*, p. 41) says, 'the serpentine weighing, without any carriage, about 250 lb. was the usual ship gun', and assumes that the *Regent's* armament consisted entirely of guns of this type. This is impossible, for the inventories show that part of her ammunition consisted of 'dice of iron of 1½ inch', a sort of missile that could only be fired from guns of fairly large calibre. The *Sovereign* also had dice: but then she is credited with stone-guns, from which we should expect them to be fired. We must decide, therefore, either that the *Regent* had other guns besides serpentines, the clerk who made the inventory having believed that any gun was a serpentine; or else that some of her serpentines were heavy pieces. The inventory helps a little, but not much, when it says (*Acc. and Inv.*, p. 261) 'serpentines of divers sorts': also that 30 of her serpentines were of brass. As will be shown presently, many brass serpentines were much bigger than those of iron, being of at least 10 cwt., and mounted on truck carriages. The important question is how big a serpentine might be at this date.

Fortunately Mr Oppenheim decided to include in the same volume (pp. 82 *seqq.*) the lists of ordnance and ordnance stores sent to Scotland for land service in 1497. As is usual in this period, the guns are described merely by the names of their types (in addition to which the more important had individual names), but the weight neither of the gun nor of its shot is stated. In many cases, however, the stores allotted to each gun include horse harness. Thus we know that it took 26 horses to draw a bombard; that curtows needed 26, demi-curtows 20, or sometimes more; also that two serpentines, one called the *Lion* (p. 85), and one the *Greyhound* (p. 94), were each drawn by 20 horses, and another (p. 101) by 10 horses. Bombards had iron and stone shot in the proportion of two to one, curtows in the ratio of three to one: large serpentines fired only iron shot, small serpentines iron or lead.

A useful comparison is available from the preparations made in England

¹ There is no evidence that she had heavy stern chasers on the orlop. It is not improbable that she had a round stern until rebuilt at the end of the reign.

for the Armada campaign of 1588. The allowance of horse per gun for field service then was:

Cannon	24	Saker	7
Demi-cannon	18	Minion	6
Culverin	14	Falcon	3
Demi-culverin	12		

(*Savile-Foljambe MSS.*, pp. 46, 47)

From this it may be inferred that the big serpentines of 1497 were at least as big as culverins of 1588.¹ The earlier allowance of horses is more generous than the later, perhaps nearly as three to two, probably because the distance to be covered was much greater.

The covering squadron in this 1497 expedition comprised three royal ships and seven hired merchantmen, the *Regent* being the flagship (*ibid.* 339 *seqq.*). The other two were the *Sweepstake* and *Mary Fortune*, of about 100 tons or less; the merchantmen may have run from 100 to 400 tons. All these ships carried lead and dice of iron as ammunition: i.e. all were armed partly with small serpentines, and partly with guns of larger calibre.

It is interesting to notice here what guns were in the *Mary and John*, of 240 tons, when she was partly burnt in 1512. The guns were saved, and were turned over to Cornelis Johnson to be repaired and remounted. His accounts specify eight 'great iron guns' and one 'small brass gun', which came 'out of the *Mary John*' or 'from the Great Ship'. They mention also three other great guns, one of them a cast piece, another a long sling, which may have come from the same ship, but concerning which the form of Johnson's account leaves some doubt (*Stowe MSS.*, pp. 146 ff., 26b, 28b, 30b). When he said 'great gun', Johnson commonly, if not invariably, meant a 'murderer'; and this, as will be shown presently, was the standard heavy ship-gun of the period. Thus this small ship had at least eight heavy guns in 1512, and she was one of the oldest ships in the navy, being contemporary with the *Regent* and *Sovereign*. It is a pity that we do not know to what extent, if any, she had been rearmed between 1509 and her burning; also that we have no record of her armament in the previous reign. It will be seen, however, that it is at least possible, if not probable, that some of these heavy guns were included in her original armament.

The available evidence for Henry VII's reign does not seem at present to take us any further. Still, the picture is fairly definite. If 'serpentines

¹ [In 1588 the culverin was a long 17-pounder; and the average weight of the 176 specimens stored in the Tower in 1595 was 4015 lb. See *M.M.*, Vol. xxviii, no. 2, p. 145. It would seem to follow, then, from our author's ingenious inference, that his big serpentine of 1497 weighed at least 4000 lb.]

great and small' for land service included guns which can hardly have weighed less than 30 cwt.,¹ and if the serpentines mounted in ships were 'of divers sorts', it is a reasonable inference that some of the ship serpentines were heavy guns. The mere fact that they had detachable chambers is no argument to the contrary, for nearly all early guns, of whatever calibre, were so fitted. On this point Mr Oppenheim is seriously misleading: thus (*Admin.*, p. 54) 'Slings were "bigge peces of ship ordenance". "Bigge" must be understood relatively as they were fired with chambers'; and (*ibid.* p. 56) 'The *Henry* in 1514 carried only one bombard, two culverins, six falcons and one curtow, in addition to 126 serpentines and 47 other guns of various but probably light weights, seeing that most of them were used with chambers'.

Sir Julian Corbett followed to the same effect: 'The armament of Henry VIII's ships at first consisted mainly of small quick-firing or secondary pieces, for use at the closest quarters and in boarding. These were serpentines, sling and murderers (*Drake and the Tudor Navy*, p. 26, note); and he goes on to describe slings as short pieces of the stone-gun type, and murderers as small mortars. On the other hand, he adds that curtows were short bombards, and says that they were first introduced into ships by Henry VIII. I do not know on what evidence this latter statement is based, save that the name 'curtow' has not been found in any ship list before 1509.²

From the building of the *Sovereign* and the *Regent* until after the accession of Henry VIII, a period of more than 20 years, no ship of force was built or rebuilt for the royal navy. Although we have no dimensions or technical descriptions, still less draughts, of any of the royal ships of this period, yet happily we have inventories of all the more important ships added to the navy before 1515, whether bought or built; and, in addition, we have various accounts for the building and repair of ships, and for the making and repair of guns. These papers, supplemented by a specification drawn by William Gonson for the construction of a ship,³ and by the somewhat fanciful picture at Hampton Court which is now ascribed to Vincent Volpe, allow us to decide with reasonable certainty what changes had taken place in the blank 20 years which intervened between the building and rebuilding of the *Sovereign*. Whatever the changes were, it is evident that they cannot have been first introduced by English shipwrights.

¹ [Queried in the MS. Probably L. G. C. L.'s 'horse-drawing' comparison—see above, p. 248, which is a later addition to the MS.—made him see that he might raise this figure to 40 cwt.]

² [In fairness to Corbett it should be noted here that—later, temp. Elizabeth—both 'sling' and 'murderer' were the names of small guns. L. G. C. L. himself points this out much later in his paper.]

³ By Baker's formula of 1582 this ship would have measured about 360 tons. As a royal ship she would probably have been rated at 400. By the old measurement of the wine trade, which dated from at least the fourteenth century, and was in use in Henry V's navy, she would have measured 256.

There were only two considerable changes. The great ships of 1509 and 1515 were still carracks, as were those of the last reign; and whether they were built at home, or bought from Spain, from Italy or in northern Europe, they exhibit no essential difference among themselves. All, however, differ from those of Henry VII in having their castles higher built, a feature which may perhaps have been introduced from Spain; and all, down to a burthen of 400 tons,¹ or perhaps a little less, were now for the first time pierced for guns on the lower deck. It has often been loosely assumed that, because these ships had lower deck guns, they carried a whole lower tier. Quite certainly they did nothing of the sort: they had merely two, or in a few cases three, ports a side at the after end of the orlop, and another pair on that deck in the flat of the stern.² The Hampton Court picture gives some reason for supposing that by 1520 a few of the greatest ships may similarly have had another pair of ports a side at the fore end of the overlop; but the inventories, and the Gonson specification to which reference has been made, prove that this addition had not been made before 1514. It is unfortunate that the evidence for the *Henry Grace à Dieu* fails at this point; for it is conceivable that she may have been the first English ship to have guns at both ends of her lower deck. It may be mentioned here that, valuable as Gonson's specification is, it is undated, and the ship described remains unidentified, and indeed may perhaps never have been built.

As is well known, the introduction of gunports is credited to Descharges, a shipwright of Brest, and ascribed to the year 1501. This tradition may well be true, if we examine a little closely what is meant by the phrase. The claim has been discounted because there were undoubtedly gunports on the upper deck in the previous reign; but this objection, I think, misses the point. Ports on the upper deck and in the superstructures needed no lids, or at least had none; but such ports on the overlop, which at this period was flush with the water amidships, or even actually below it, would have ensured the speedy swamping of the ship. The claim on behalf of the Frenchman, therefore, probably amounts to no more than this, that he was the first to see that guns could be mounted near the waterline if ports could be contrived which could be readily opened and shut, and would prove reasonably watertight. After all, there was no great innovation in this: large merchant ships had for long had a pair of large square cargo-ports in this position (see, for example, the W.A. carrack), and had even got so

1 [Altered, in pencil, to 300 tons.]

2 The flat squared stern (tuck) seems to have been of Tudor introduction. The reason uncertain: the shortening of the stern post, the introduction of the whipstaff, and of stern chase ports, are very nearly if not quite contemporary; as also the mounting of guns in Mediterranean-type galleys. Which was cause, which effect?

far as to hinge the lids by 1448 (see the ship by Reixach, *M.M.*, Vol. xvii, p. 337). The 'Keeper of the port' was a very old, and no doubt a very necessary, rating. It is interesting to notice that, in the list of dead shares for the *Henry Grace à Dieu*, drawn up by Howard himself, at the time of the ship's completion, there were two 'yeomen of the ports' with two mates. We have no corresponding list of ratings for any other ship of this date, but doubtless the same ratings were borne in all ships having lower deck guns. It may be added that these yeomen and their mates were seamen, not gunners. The gunners were not on the list because they did not draw 'dead shares' as proficiency pay. The gunners were intermediate between the seamen and the soldiers; they were specially recruited, many of them being at this date foreigners, chiefly Flemings, and their allowances beyond the normal ship's pay were known as 'rewards'.

It is not possible to say what was the first English ship to mount these lower-deck guns. The material change was a small one, and may easily have been made before 1509 in at least the *Regent* and the *Sovereign*, provided their overlops rose high enough above the waterline aft to allow of it; otherwise the probability seems to be that the change began with the rebuilding of the *Sovereign* in 1509.¹

1 [Note in later hand.] It seems to be the case that galleys began about 1500, or possibly a few years earlier, to carry each a heavy gun on the coursia [see footnote 2 below]. In calm weather a (sailing) ship would be virtually defenceless against such a gun, especially if the galley came up astern, as she naturally would do. Guns were no doubt already mounted in the stern of the ship; but, the stern being round, and the upper works both high up and tumbling home much, her stern chase cannot have been important. It is doubtful if the *Sovereign* and *Regent* when first built had more than four to six serpentines in stern chase. As long as the ship kept her old form, this armament could not be increased to any extent: but, to deal with the new menace of the galley, one or two heavy long-range guns were clearly needed.

This was the problem which shipwrights clearly had to solve. They did it by shortening the stern post, giving the ship a square tuck in which port holes could be cut; and they profited by the altered form in introducing the whipstaff. Beyond the mention of Descharges's name there is no evidence of who were the men responsible; but as several important changes were virtually contemporary, the assumption is that several men, probably of different nationalities, were concerned. The rebuilding of the *Sovereign* suggests that the change was complete by 1509 at latest. That the *Regent*, which began building 1486-87, was built by Sir Richard Guildford, Master of the Ordnance, by a 'novel construction . . . with ordnance and fittings', is strong presumptive evidence that the change began then, as far as England was concerned: and, as the *Regent* was an imitation of the French *Colombe* (about which virtually nothing seems to be known), that it had begun even earlier in France. The *Sovereign* was built 1487-88. She had some stone guns not mentioned for the *Regent*. The *Regent*'s serpentines were mounted on Miches. (*Acc. & Inv.* especially p. 261). [For 'miches', see below, p. 284.]

2 [Or *corsia*, the solid fore-aft gangway running over the keel, leading at the forward end to the *rembata*, a reinforced platform designed to carry the main battery of forward-firing guns. At the after end was another platform (the *spalliera*) from which the vessel was conned and fought. In a galley, comparatively lightly built, no gun of any size could be fired anywhere but along the line of the *corsia*: i.e. as bow-chaser or stern-chaser, but not as a broadside gun.]

We have no detailed knowledge of French ships of this period, and can only suppose that between 1501 and 1509 some few had been given lower-deck ports. As the purpose of mounting guns so low was to attack the enemy's waterline, by point-blank fire, the original idea having come apparently from the *coursier*¹ of the galley, we would expect to find, and we do find, that the heaviest guns were placed in this position. This incidentally was the origin of the gun-room, but this name does not yet occur. It is perhaps permissible to infer from this that it was not yet a room, but merely a part of the undivided overlop. In the reign of Elizabeth it was separated from the overlop by a fall and a bulkhead, and its name—the 'gunner's room'—seems to mark the change.

In addition to the *Henry Grace à Dieu*, there are inventories, including guns, available for ten large ships and for two galleys. For most of these there are two or more copies, made at or near the same time but not strictly duplicates; for often there are differences of wording which sometimes provide valuable information. In most cases, but not in all, the distribution as well as the number and nature of the guns is given. There are, however, pitfalls in these inventories, as well as what may be considered as normal difficulties. One of these lies in the lists of guns, another in the schedules of their distribution.

The normal difficulties arise partly because the names of the guns at this early date were far from being standardized; partly because there are listed among the accessories of the guns several things of which our present knowledge is very incomplete. See, for example, the article on Miches, etc., in *M.M.*, Vol. v, p. 34; and there are many other more or less obscure accessories mentioned in the gun-makers' accounts.

The pitfall in the lists is that they show only what guns were actually on board at a particular moment, not what the full armament was. The inventories were made after the French War ended in 1514, and the accounts of the gunmakers, especially of Cornelis Johnson (for a sample see *M.M.*, Vol. xiii, p. 368), show that guns were constantly coming and going between the ships and the ordnance wharf at the Tower. The lists for the *Katherine Forteliza*, made at the end of the war (*E.* 36/13, f. 36, and *S.P.* 1/9, f. 232) show what might well have been the whole armament of the ship: but they omit several guns which had been put on board by the King's order in 1513 (*Stowe*, 146, f. 43*b*). The discrepancy is important, for it suggests that the King was aiming at a higher degree of standardization than could be realized during the stress of war.

Mountings and gear alike were still very defective, and gave out under

¹ [The biggest (and the central) gun of the galley's forward battery, more often written 'corsia', and named after that gangway over, and in line with, which it must always stand.]

the test of service, so that it is pretty clear that ships in harbour rarely had their full armament on board till ready to sail. It is also a consideration that during the years 1512-14 a number of large ships were brought into the Navy, a fact which must have thrown a heavy strain on the available supplies of ordnance. This is clearly reflected by the records: there were not enough guns to go round, and any that became available were at once issued to the ships. As an instance, it may be noticed that when the *Mary and John* (formerly the *Carvel of Ewe*) was burnt at the outbreak of the war in 1512, the guns saved from her were at once repaired, restocked, and distributed to the ships fitting out (*Stowe*, 146, f. 26*b*, *seqq.*).

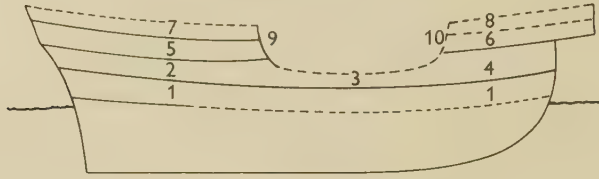
As to the schedules of the distribution of guns on board ship, it is a pitfall that, in some cases owing to carelessness, the information is incomplete. After writing down what guns were on three or four decks, the clerk sometimes forgot to specify further, so that the whole remainder of the armament appears as belonging to the deck last mentioned. This is particularly noticeable in the case of the *Henry Grace à Dieu*, in which 72 guns, including all the heaviest, are set down as belonging to the second deck in the after-castle; the orlops, the upper deck and the poop all being omitted. This is the more regrettable as the *Henry*, being new, had probably at the moment something approaching her full armament on board. In the gunmakers' accounts, which are one of the chief sources of information as to the type of guns, it is often impossible to tell for what service the guns named are intended, whether for sea or field work, or for the armament of castles and bulwarks. A further difficulty—that the names of the decks on which the guns were mounted are in some cases new, and in others seemingly duplicated or contradictory—is more apparent than real. With a little tabulating and plotting, this part of the enquiry becomes clear enough.

The *Great Elizabeth* may be cited as a useful example. Mr Oppenheim (*Admin.*, p. 54, quoting *E.* 36/13, f. 76), gives this ship guns on three decks in the forecastle, and on three in the after-castle, which he loosely calls the 'poop'. He shows no armament in the waist, and none in the gun-room on the overlop (see Fig. 1A). If this was right it would be surprising, and at variance with what is known of the developments which took place in the early years of the century. The errors are explained thus. In the document quoted the decks are named as follows: 'In the forecastle in the nether deck: in the middle deck: on the upper lop: in the stern: in the nether deck: in the middle deck: in the Upper deck.' Mr Oppenheim was misled into interpreting the 'upper lop' as the 'upper deck in the forecastle': also, while he rightly saw that the three last-mentioned decks belonged to the after-castle, he did not notice that the first named of them, the 'nether deck', also included the waist. A comparison of the document quoted with

what is essentially a duplicate of it (*S.P.* 1/9, f. 241) shows that the 'upper lop' is merely a variant for the more usual 'overlop'; and a tabulation of the inventories for several ships shows that the armament of the waist was, more commonly than not, written down as belonging to the 'nether deck', otherwise called the 'barbican'. Thus, instead of having guns on three partial decks at each end of the ship, and none between, the *Elizabeth* had in fact four partial decks of guns aft, only two forward, and one amidships (see Fig. 1B).

Fig. 1. GUN-BEARING DECKS
(Solid lines show decks bearing guns)

A. According to Oppenheim, *Admin.* pp. 54-5.



B. According to the evidence.

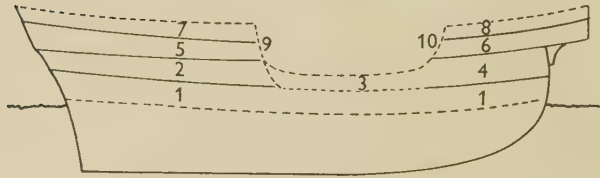


Fig. 1. 1, The overlop, or nether overlop, or upper lop. 2, The somercastle, or nether deck, or barbican. 3, The waist. 4, The nether deck in the forecastle. 2, 3, and 4 together are occasionally called the upper overlop. 2 and 3 together are frequently called the nether deck. 5, The deck over the somercastle, or the somerdeck, or the middle deck, or the second deck. 6, The middle deck in the forecastle, or the upper forecastle. 7, The highmost or highest deck, or the upper deck, or the deck, or first deck; or (probably when shortened to a poop) the small deck. 8, The upper deck in the forecastle (not in small ships). 9, The breast of the ship. 10, This may have been called the cowbridge head, but the name only occurs once, and its precise use is not clear. Otherwise there seems to have been no name for this bulkhead, though it carried guns.

This arrangement was general in all ships of Henry VIII's navy, whether built in England, in Spain, in Italy or in Germany; whether of 300 tons as the *Christ*,¹ of 900 as of the *Elizabeth*, or of intermediate size. As Antoine

¹ In the *Christ* one sling was mounted on the poop, an unlikely place for a heavy gun in so small a ship. To explain the difficulty, as I had no mention of slings weighing less than about 16 cwt., I assumed this to be a gun of about that weight; also, as there would be no need to keep both the chambers with the gun, and indeed as both chambers could be kept below till the ship cleared for action, the weight on the poop at sea would be less than half the total weight of the

de Conflans shows that the same arrangement was observed in 1515 in French ships, it is evident that it was then the established practice of Europe.

It is convenient at this point to tabulate the guns carried by the ships for which lists are available (see Table 1), but it must be understood that the table anticipates the evidence from which the distribution of the guns into categories is decided. Accepting, in anticipation of the proof, that the guns did belong to the categories to which they are assigned, it will be seen that the number of heavy guns carried was much in excess of what has hitherto been supposed. The armament for some ships is evidently incomplete: certainly for the *Great Nicholas*, especially in light guns; also for the *Great Barbara*, which has no heavy long guns; and almost certainly for the *Gabriel Royal*, a ship larger than the *Sovereign*, but credited with only half her armament.

The table, however, does indicate that a considerable degree of system already existed, and that heavy and light guns, long and short pieces, were assigned to the ships on a scale roughly proportionate to their tonnage.

As all serpentines of whatever description and all stone guns, except such as are definitely stated to be 'great', have been classed in the table as light pieces, it is probable that the weight of the armaments is considerably underestimated. In most of the ships the types of guns are few in number, and the difficulties which arise are due to the lax and varying ways in which the main types are subdivided by different officials. In the case of the *Henry Grace à Dieu* there are additional difficulties owing to the inclusion in her armament of a certain number of pieces to which the conventional type-names could not be, or at least were not, applied. Some of these, no doubt, were of an experimental nature; but if the armament as a whole seems to be less homogeneous, and perhaps less powerful, than we would expect to find in so important a ship at that date, we have to consider that the strain of the war had almost exhausted supplies, and that it was

gun. It is possible that this may be the explanation, and be one of the reasons why slings were carried relatively high up in several ships.

Since making the table, however, I have found a mention of 'a little small sling came out of the *Genet of Pier wyne*', a ship of only 70 tons (*Stowe*, 146, f. 43 b). This suggests a small piece; but on the other hand we know that the 'galleys' built in 1512-13, which were of 80 tons, carried slings of 16 cwt.; and one of them carried a culverin, a much heavier gun, in addition. It seems therefore reasonable to decide that the *Christ's* sling, and that from the *Genet*, which was transferred to the *Katherine Fortileza*, though small for slings, were still heavy guns, probably of between 12 and 15 cwt. total weight.

A further reference to 'a little small sling', perhaps the same one (*Stowe*, 146, f. 27 b) shows that six bolts and a breech (see footnote², below) for it weighed 66½ lb. These were very minor fittings; whence it appears that the gun must have been of considerable weight.

² [L. G. C. L. discusses 'breeches' later, p. 262.]

Table 1. *Guns in royal ships, 1509-14.*

Ship	Tons	Date	Long				Short				Totals							
			Heavy		Light		Heavy		Light		Totals							
			Sling	Cul- verin	Va- rious	Total	Falcon	Serpen- tine	Total	Curtow derer	Cast piece	Great stone- gun	Total	Stone- gun	Small	Total	Heavy	Light
<i>Christ</i>	300	1512	3	—	—	3	2	26	28	—	8	—	8	15	1	16	11	44
<i>Gabriel Royal</i>	700	1509	2	2	—	4	14	15	29	1	—	2	6	7	—	7	10	36
<i>Great Barbara</i>	400	1513	—	—	—	—	8	19	27	—	10	—	10	2	—	2	10	29
<i>Great Elizabeth</i>	900	1514	6	—	—	6	—	90	90	—	8	—	16	13	—	13	30	103
<i>Great Nicholas</i>	400	1512	2	—	—	2	—	11	11	—	5	2	7	1	—	1	9	12
<i>Henry Grace à Dieu</i>	1500	1514	1	2	5	8	6	126	132	1	18	16†	35	8†	1*	9	43	141
<i>John Baptist</i>	400	1512	2	—	—	2	1	34	35	—	10	1	11	—	2	2	13	37
<i>Katherine Fortileza</i>	700	1512	6	—	—	6	2	41	43	1	14	—	15	13	—	13	21	56
<i>Mary Rose</i>	500	1509	2	—	—	2	5	33	38	5	2	—	13	26	4	30	15	68
<i>Peter Pomgranate</i>	450	1509	3	—	—	3	2	61	63	—	11	—	11	6	8	14	14	77
<i>Sovereign</i>	600	1513	4	2	—	6	2	62	64	7	7	—	14	2	2	4	20	68
<i>Katherine Galley</i>	80	1513	2	1	—	3	—	6	6	—	—	—	—	—	—	—	3	6
<i>Rose Galley</i>	80	1513	3	—	—	3	—	2	2	—	4	—	4	1	—	1	7	3
Totals	—	—	36	7	5	48	42	526	568	15	104	5	34	158	18	112	206	680

* A vice-piece, see p. 281.

† [The list gives: great stone-guns, 2: stone-guns, 22. For L. G. C. L.'s reason for 'editing' these figures, see p. 269.]

apparently with great difficulty that anything like an adequate armament was got together for the ship. It included new guns by all the chief English makers, as well as heavy pieces from Spain and from Flanders.

Little or no attempt has hitherto been made to determine the weight of the guns mounted on board ship. Mr Oppenheim (*Admin.*, p. 55) mentions that a curtow was 'a heavy gun of some 3000 lb.,¹ hitherto used only as a siege-piece on land', and adds that 'its transference to maritime use marks a revolution in ship armament'. He rates murderers, slings, stone-guns and serpentines as light guns, though he recognizes that slings might be relatively big, and that murderers at this date were not necessarily as small as they were at the end of the sixteenth century. This leaves only culverins and bombards as heavy guns, with which, curiously, he seems to class falcons.

A list of guns of 1544, which has often been quoted, refers to '4 bombards and great port-pieces' of 11- and 12-in. calibre which were in the *Henry Grace à Dieu* before her rebuilding; but no particular use has been made of this information. It does not even seem to have been noticed that the 'port-pieces' await identification, as until after 1515 the term was not in use.

The following notes on the size, weight and cost of guns must be taken as being little more than a sample of the material available in the public records. The references are very numerous but much scattered; the generic term 'gun' occurs with unwelcome frequency, and often it is only by collating different documents that it becomes possible to determine what type of gun is intended. Sometimes this resource fails, and the 'gun' remains merely a gun.

Some payments made in 1509-12 (*L. and P.*, Vol. 1, 1463, new edition) are:

- (1) A great gun of copper with two chambers, £35.
- (2) Two great guns of iron, £25. 6s. 8d.
- (3) Six pieces of great ordnance 220 ducats, and another piece at 28 ducats.

Of these, the cost in (1) and (2) included 'stocks'—i.e. carriages, a term which does not occur so early. The cost of brass or 'copper' guns varied little from £2 per cwt.; that of iron guns, other than slings, was about

¹ This means 30 cwt. In gunmaking, both for raw metal and for finished guns, the 100 was the avoirdupois cwt. of 112 lb. Occasionally there was a particular statement of this: e.g. 'Every C after V^{xx} XII lbs to the C' (*Stowe*, 146, f. 43): but by comparing quantities with prices it can be seen always to have been the case. As far as I have noticed, it was only with gunpowder that the cwt. was of 100 lb. (see footnote 2 below).

² [This 'short hundredweight' in the measurement of gunpowder was certainly the norm in the 1580's and 1590's. A possible reason for having a 'powder-cwt' of 100 lb. while a 'gun-cwt.' was worth 112 lb. is that a powder-cask (i.e. cask + powder) weighed 112 lb., the powder weighing 100 and the cask 12. Such a distinction could not be made in gun-weighting.]

14s. per cwt., but sometimes as low as 12s., and sometimes 15s. Slings were much more expensive, the rate being sometimes 4d. per lb., or nearly as much as for brass guns. If we allow, at a guess, £3 for the stock of (1), and the odd £5. 6s. 8d. for those of (2); and if, in (3), we take the ducat at 5s. 6d., we arrive at the following approximate weights: (1) 15 cwt., (2) 14 cwt., (3) six of 14 cwt. and one of 11 cwt.

There is nothing to show of what types these guns were, whether for sea or land service; also it is remarkable that no chambers for the iron guns are mentioned, for at this date very few iron guns, save of the largest size, were made 'whole'—i.e. without chambers. The mention of chambers raises the further question as to what the reputed weight of a gun was. With 'whole' guns, of culverin type, there could be no doubt, for the gun was complete in one piece: but the chambered gun had not only its 'hall' and its 'chamber', but a considerable number of minor parts. For 'serpentes' and 'stone-guns', and perhaps also for 'murderers', two chambers weighed together about half as much as the 'hall', and the miscellaneous minor parts, together with the ironwork of the stock, weighed more than the chambers. Therefore the real weight of the gun was about twice that of its 'hall', which might be its reputed weight. With slings the difference was even greater, for though the weight of the accessory parts was much less than in the other types, that of the chambers was very much more, each chamber being about three-quarters as heavy as the 'hall'. Thus the total weight of a sling was about two-and-two-thirds times the weight of its 'hall'.

It will be seen, therefore, that the guns of 14 and 11 cwt. mentioned at (2) and (3) above possibly, even probably, weighed very much more. If those weights are those of the halls, the total weights would be about 28 and 22 cwt. if the guns were of serpentine or murderer type, but about 38 or 29 cwt. if they were slings. In any case, these particular guns are the smallest which have been noticed described as 'great guns'.

A contract made with Hans Popenreuter of Malines in January 1510 for the supply of brass ordnance (*Cott. Galba*, B, III, ff. 4 *seqq.*) gives useful evidence as to the size of curtows and serpentes. Both these guns had a powder charge equal to the weight of the shot. It seems inevitable that the curtows must have blown a great deal of it out unburnt. Under this agreement Henry acquired 12 curtows of 40 cwt., 35-pounders; six of them 7 ft. 3 in. long and the other six 7 ft. 9 in.: also 12 'other curtows' (they are not called demi-curtows in this document) 'of 28 cwt. or thereabout, of the length of the other or a little less', and these were 24-pdrs. The serpentes were 24 in number and of 11 cwt. each (presumably including two chambers apiece, though these are not mentioned), 'bearing

a stone of lead or iron of 4 lbs'. This rather suggests two calibres, for a bore that would take a 4 lb. iron shot would serve for a 6 lb. shot of lead. How many of these guns went to the ships is undetermined; but as the *Mary Rose* and *Sovereign* were armed just at the time of this contract, and as each had brass curtows, it is a fair inference that they had at least some of them from this supply. It will be noticed that these serpentines correspond, in the weight of gun and of shot, to the later minions, 4-pdrs, which stand near the lower limit of heavy guns.

Popenreuter made much bigger guns to Henry's order, the biggest of them perhaps being the 'Twelve Apostles', 'to our use in our Town of Calais' (*Stowe*, 146, f. 107). These were brass bombards, or large curtows (the curtow being really no more than a short bombard), and weighed 56 cwt. apiece.¹ As there were 'great curtows' on board the ships, it is likely that their weight approached that of these guns.

There were larger guns than these. A list of the King's guns, delivered to the Lieutenant of the Tower in 1514 (*E.* 101/60, f. 29), includes demi-culverins of 31 and 37 cwt., and two 'great culverins' of over 67 cwt. each; weights which are surprising.² The same paper, of which unfortunately a mere fragment remains, mentions two serpentines of about 10 cwt. each.

With very few exceptions slings were certainly great guns, and some of them were very big. In 1514 there were two in the King's storehouse at Erith, of which one was 22 ft. long, and the other 20½ ft., not counting the length of its chamber. These were not the only heavy guns used on board ship; but enough has been said to show that in Henry VIII's time the word great was only applied to guns that really were great.

It is now necessary to try to describe what were the essential features differentiating the several types of guns from each other. The number of type-names, as will be seen from Table 1, is not large. Some names, especially 'basilisk' and 'mortar', which were in use at this date, are not

¹ Cf. p. 261 below. These weights would correspond to double curtows. An account by Cornelis Johnson for the ironwork for the stocks of what seem to have been six of these guns calls them curtows (*E.* 101/57 (2), f. 27). This ironwork weighed over 57 cwt., or 9½ cwt. per gun. Louis Napoleon (*Études*, Vol. 1, p. 128) quotes Philip de Cleves, who tells that at this date Popenreuter made double curtows of 7300 lb., 80-pdrs, and curtows of 5500 lb., 50-pdrs.

² [In England perhaps, but not abroad. As late as 1592, Luys Collado, a Spaniard, cites culverins firing shots ranging from 50 to 20 lb. By then, culverins had certainly become longer, and much more heavily metalled, so that Collado's 50-pdr would have been an immense piece, much heavier than this 6700 lb. one: also quite unsuitable for ship-use. But so would Popenreuter's 6700 lb. gun which (allowing for its lighter build and lesser length) might well have fired a shot of 50 lb., or nearly. Even in England, some culverins—ship-borne ones too—ran to very great weights. The heaviest afloat in 1595 weighed 6398 lb. (though the average, as we have seen, was only 4015 lb.). But, being presumably of much later build than Popenreuter's, it would not have fired nearly so heavy a shot: perhaps not more than 26 lb. Cf. *M.M.*, Vol. xxxix, no. 1, p. 10.]

found in the lists for Henry's ships. Others, such as 'saker', 'port-piece' and 'hail-shot piece', also do not occur, and do not seem to have been introduced until shortly after 1515. We will begin with two very big pieces, the Basilisk and the Bombard, which not only failed to survive on ship-board in England, but are absent, even, from the 1509-14 ship-lists.

Basilisk

This was a name applied to a long heavy gun of large calibre; but whether muzzle- or breech-loading it does not seem possible at present to say. The name, apparently of Italian origin, was not adopted into English, though probably guns which Italians would have called basilisks were in use here under some other name. All guns named after serpents were long guns of high penetration;¹ and the mythological basilisk being a serpent so deadly that merely its look was fatal, it was natural that the gun named after it should be the most deadly of the serpent class. Pitscottie,² writing some 50 years after her launch, says that the *Great Michael* had three 'great basils' (i.e. basilisks), which is possible enough, though Lindsay's word on such a point is hardly evidence. It is more to the point that in 1512 an Italian reported (*N.R.S., French War of 1512*, Vol. x, p. 52) that 'Insunt triremibus basilisci tres, in strage Venetorum habiti (1509), machine genus quod uno ictu potis est navem unam . . . perterebrare atque discerpere'; that is, 'which are able to penetrate and shatter a ship with one shot'. Nor was this an idle vaunt, for these guns did sink one of the English ships, and nearly sank another, thereby causing great consternation among the English mariners.³

It seems likely that this gun would by German or Spanish gunmakers have been called a cannon serpentine, or merely a 'great serpentine'; that it was of about 8 in. calibre, and threw an iron shot of about 50 lb. Its use as the *coursier* of a galley is proof enough of its great size.⁴

1 [Relatively speaking, of course: but even then gunmakers and gun-users, inexperienced as they were, were distinguishing between long guns whose shots, even if light, 'pierced', and heavy-shotted short guns which 'shook'. The big basilisk about to be described apparently did both.]

2 [Robert Lindsay of Pitscottie, *History of Scotland*.]

3 See also *ibid.*, pp. 133, 136, 140, and especially 146: 'Upon . . . the 22nd day of Aprill, 6 galyes and 4 foystes [of Prégent's fleet] came through part of the Kynges navie, and there they sanke the ship that was maister Compton's, and strake through oone of the Kynges new barks . . . in 7 placys, that they that was within the ship hade much payne to hold her above the watre.' Compton's ship seems to have been the hired *Trinity of Bristol* of 160 tons: the other was the *Less Bark* of 240 tons.

4 [This gun-name never acclimatized itself in England, though it turns up sporadically throughout the sixteenth century; sometimes as a small whole-culverin, a 15½-pdr (Sheriffe), sometimes as a cross between a cannon and a culverin (Lucar), though heavier and lighter-metalled than the latter, and so firing a heavier shot. One solitary specimen crops up in 1588 in the

Bombard

The *Henry Grace à Dieu* had one great bombard of brass which, from a later mention, is known to have been of 11- or 12-inch calibre. No other English ship had any, but there were several in the King's siege train. As far as I know, the only extant bombards are of much earlier date than Henry VIII's reign. The two best known of them belong to the middle of the fifteenth century, and, though at first sight very different, yet are virtually identical in essentials.¹ The earlier of the two is *Mons Meg*, a built-up iron gun, 13½ ft. long of 20-in. calibre: the other a cast gun of brass from Turkey, made in two pieces which were screwed together, is 17 ft. long and of 25-in. calibre. Each of them has a powder chamber of less calibre than the chase; and in each gun the whole length, including the powder chamber, is only 8 calibres. These guns fired only stone shot, of 3 and 6 cwt. respectively.

It seems evident that Henry VIII's bombards must have been much longer, for it is understood that a curtow was a shortened bombard, and the curtows of 1512 were from 12 to 14 calibres long. The bombard, therefore, was quite possibly as much as 20 calibres long. In 1472 Charles the Bold of Burgundy had nine great iron bombards, and eight of copper, from 8 to 11 ft. long; also ten curtows 4½ ft. long (Louis Napoleon, *Études sur... l'Artillerie*, p. 66). As curtows had certainly nearly doubled in length by 1510, it is fair to suppose that bombards had grown in something like the same proportion; otherwise the two types would have coalesced, and the distinction would not have continued to be made. The lengthening of the piece seems to have taken place towards the end of the fifteenth century, and to have accompanied the reduction of calibre which

Spanish fleet—a 'basilisco' found in Pedro de Valdez' captured flagship, *Nuestra Señora del Rosario*, and listed in the middle of the whole-culverins. It answers to Lucar's rather than Sheriffe's description, weighing 4840 lb., and probably firing a shot of at least 30 lb.; probably, too, an old gun, old-fashioned and unfamiliar to our inventorists: yet, save for its lighter shot, perhaps not so very different from the gun which sank the *Trinity of Bristol*.]

1 [In pencil—a 'latest' addition.] Also one at Ghent. Also two English bombards abandoned at Mont St Michel early in Henry VI's reign and still preserved there. There is a model of one of them at the Rotunda, Woolwich.

[The Ghent gun is *Dulle Griette*, a sister of *Mons Meg* of Edinburgh: both are certainly earlier than 1479, probably by many years. The Mont St Michel pair, called the '*Michelettes*', were probably abandoned in 1424. The 'brass gun from Turkey' is presumably the beautiful and unique Dardanelles Gun at the Tower. All but the first of these are described and illustrated by Dr Charles Foulkes in his *Gunfounders of England* (C.U.P. 1937). All but the last-named are 'built-up' of wrought iron longitudinal bars; but the Dardanelles Gun is cast in bronze—a triumph of early workmanship, for its date is 1464. There are two other—but smaller—built-up wrought-iron guns in the Rotunda. (Catalogue, 1934, nos 6 and 7, there described as 'serpent guns of Henry VI's reign'.)]

allowed the use of iron shot. Thus it seems likely that the one great bombard in Henry VIII's navy was 20 ft. long and of 12-inch calibre, firing an iron shot of over 200 lb. or a stone shot of some 70 lb. It does not seem likely that the weight of such a piece can have been less than 10 tons—i.e. 1 cwt. of metal to 1 lb. of shot. This is proportionately lighter than the curtows of the same date. There is no evidence that bombards were made with detachable chambers (with the exception of the Turkish screw-gun),¹ but it is not impossible that one for sea service may have been breech-loading.

The mention of breech-loading makes it necessary to refer here to the fitting known as the 'breech' of a gun, which is often mentioned in gun-makers' accounts and inventories (e.g. *Stowe*, 146, ff. 12*b* to 15, 26*b* to 31, *passim*; *S.P.* 1/9, f. 232). Its use is very obscure, for the fitting seems to have been used in guns of all sizes, from great slings to harquebuses, and generally, though perhaps not always, in guns made with detachable chambers. A possible explanation is that it was a flanged disc made to close the breech of a gun when a chamber was not used;² or equally to be used with a gun open at the breech end but not fitted with a chamber, if indeed such guns existed. The small weight of breeches, usually less than $\frac{1}{2}$ cwt. for great guns, favours this explanation.

A. SHORT GUNS

We turn next to the 'short' guns which are found in our lists.

I. Curtow

There were Curtows and Demi-curtows, which, as we have seen (p. 258), were 35 and 24 pdrs of 40 and 28 cwt. or thereabouts; and there were also double curtows or great curtows (cf. p. 259, n. 1 for double curtows), apparently 50 pdrs of about 56 cwt. All these were used in the ships. They were of brass, and were muzzle-loaders—one 'great curtoff of brass' in the *Katherine Fortileza* had two chambers (*S.P.* 1/9, f. 232). I have noticed no other case of a curtow with chambers. From what has been said above, it may be inferred that in length they varied from 7 ft. to something over 8 ft. in the largest pieces.

1 [The words in brackets are another latest addition. Hereabouts the author was evidently far from satisfied with what he had written. In fact, there *is* evidence of other breech-loading bombards—he has mentioned them. *Mons Meg* is a screw-gun with detachable chamber: the *Michelettes* are breech-loaders too, though their chambers are not screw-threaded, but tapered to enter their 'halls'.]

2 Laird Clowes, in *The Royal Navy*, Vol. 1, p. 158, illustrates early guns, perhaps of the fourteenth century, found at Walney, Lancs. One of the parts shown is perhaps a 'breech'.

Mr Oppenheim, noticing that curtows were introduced on board the *Sovereign* and *Mary Rose* in 1509, spoke of this change as having amounted to a revolution in naval armament. Had he looked a little further, he would have found that these two ships were the only ones which had curtows as an important part of their armament. Between them they had 12; the *Gabriel Royal*, of the same date, had one. Of the ships for which lists are available only two others, the *Katherine Fortileza* of 1512 and the *Henry Grace à Dieu* of 1514, had any, and each of them only one. The 11 ships for which we have lists of guns include all ships of 400 tons and over which were then in the navy. It is unlikely, therefore, that curtows were mounted in any ships other than these.

The statement (*N.R.S., French War of 1512*, Vol. x, p. 62) that the *Mary James*, a ship of only 300 tons, had six great curtows flush with the water need not be taken too literally. It is interesting to see that the *Christ* was not the only relatively small ship with a heavy gun-room armament; but it is likely that the term 'curtow' is loosely used, and that in fact the guns were murderers. Still, as the ship was armed in 1509, she may have had curtows, though not great ones. The evidence, therefore, seems to be enough to justify the drawing of a conclusion: which is that the curtow was introduced experimentally, perhaps for the first time, in 1509, but that a short experience of it showed that it was by no means an ideal ship-gun. The objection seems to have lain in its being a muzzle-loader, for at this early date there was undoubtedly a very strong preference for breech- or chamber-loading guns afloat. The chambered curtow of the *Katherine Fortileza* is worth notice as a sign of the times. There were other great chambered brass guns in other ships, especially in the *Mary Rose*, but in them they were not called curtows. It is probable that most men would have denied the name of curtow to the *Katherine's* gun.

It is unfortunate that we have a list of the distribution of the armament for only one of the ships bearing curtows, and that is for the *Gabriel Royal*. Her one curtow was mounted in the waist, the list of her armament is evidently incomplete, and no guns are listed for her overlop. Yet from the time of the first cutting of ports on it, the overlop was the position for the heaviest guns. It seems practically certain that the *Sovereign's* and the *Mary Rose's* curtows were first put on board as broadside guns in the gun-room on the overlop. Whether they remained there cannot be stated; but as inventories of this period show neither breechings nor gun-tackles, there must have been considerable difficulty in working a heavy muzzle-loader mounted, as all curtows appear to have been, on truck wheels. But the early history of gun-gear badly needs illustration; and from what I have seen of the sources, it is doubtful if adequate material exists.

The *Mary Rose*'s armament is listed in three different documents, which show certain informative variants. There were seven heavy brass guns:

	<i>S.P.</i> 1/9, f. 235	<i>S.P.</i> 1/9, f. 237	<i>E.</i> 36/13, f. 60
1.	Great gun of brass, whole	Curtall	Great curtow
2.	Great gun of brass, whole	Curtall	Great curtow
3.	Great gun of brass with 2 chambers	Murderer	Murderer
4.	Great gun of brass with 2 chambers	Murderer	Murderer
5.	Demi-curtow, whole	Curtall	Great curtow
6.	Demi-curtow, whole	Curtall	Great curtow
7.	Demi-curtow, whole	Curtall	Great curtow

A comparison of the three lists shows that a murderer was a great gun of the same class as a curtow, differing from it only in that it had chambers whereas the curtow had not. Strictly, therefore, the *Katherine Fortileza*'s curtow should be called a murderer.

II. *Murderer*

These were the favourite broadside guns at this period: in the 11 ships for which we have lists there are 105 of them. They were placed in the side ports of the gun-room on the orlop, in the waist, and sometimes on the nether deck of the fore- and after-castles. Some were made of brass but most of iron, and all had chambers. The *Great Barbara*, of only 400 tons, had also two murderers on the middle deck of the after-castle. These, it is to be supposed, were smaller than those carried by the same ship on the orlop and on the nether deck.

The name, connoting the same type of gun, occurs as early as 1497 (*Acc. and Inv.*, p. 338); but there is no evidence to show whether the gun was common at that date, or whether—as is possible—it was used on ship-board. The name was by no means always used. Frequently guns are described as 'great guns' which from other sources are discovered to have been murderers. But the term 'great gun', though it meant murderer in the great majority of instances, sometimes stood for other types, especially for 'slings', and occasionally for 'cast pieces'. The *Mary Rose*, for example, had eight 'great guns of iron, each with two chambers' (*S.P.* 1/9, f. 235); and it appears from other lists that, of these, one was a great murderer, three were murderers, two were cast pieces, and two slings (*ibid.* p. 237, and *E.* 36/13, f. 60). Where the term 'cast piece' occurs, the context suggests that the gun so described was of the murderer type.

'Cast pieces' had not always chambers, some being cast 'whole'. It seems likely that these early whole-cast guns mark the first steps towards the development of the Cannon Perier of somewhat later date. There were two cannon perriers of about 10 cwt. each in the *Great Bark* in 1531

(*M.M.*, Vol. v, p. 23). The early cast guns *with* chambers appear to have developed into the later 'port-pieces' and 'fowlers' (see p. 268 below).

It is impossible at present to be very precise about these guns: it may be possible to find details of their size in the records, but so far very little beyond the cost of some of them has come to light. Thus in 1511-12 Cornelis Johnson made two new guns of 10-in. compass, for which he was paid £111. 6s. 2½*d.* 'upon a book signed by Sir Edward Howard' (*L. & P.*, Vol. 1, p. 3608, iii): the guns were therefore for naval service. The rate at which they were paid for is not stated. The usual rate for iron ordnance was from 12*s.* to 15*s.* a cwt.; but, if put as high as 18*s.* 8*d.*, i.e. 2*d.* per lb., the total weight of the two guns would be 120 cwt. This weight—60 cwt. per gun—is little more than that of a great brass curtow of 8-in. calibre. It seems likely, therefore, that one advantage which the murderer had over the curtow was that it was both lighter and cheaper. It is quite likely, however, that the guns were heavier than is here stated. If the rate was 14*s.* per cwt., the weight of each must have been 80 cwt. Indeed, as they are not described as 'stone guns', and it is therefore probable that they were meant to fire iron shot alternatively with stone (as curtows did), it will be noticed that 80 cwt. of metal is little enough for a gun firing a shot of about 1 cwt. Corbett (*Drake and the Tudor Navy*, Vol. 1, p. 382) quotes Norton, who wrote in 1628 that cannon once weighed but 80 times their shot. This is quite untrue of 'cannon', in the technical sense; but Norton may have meant 'great guns', and it is possible that he was repeating what he had heard of the early iron murderers. Long before his time it was probably entirely forgotten what murderers had once been.¹

The fact that murderers were mounted in the ports on the overlop probably accounts for the name of 'port-pieces', which, however, is not found in the period down to 1515. It is natural to suppose that the largest murderers afloat would be those in the *Henry Grace à Dieu*'s gun-room; and though we have no contemporary evidence on the point save that she had 'great murderers of iron', we know from a later paper (*L. & P.*, Vol. xix, p. 719, i) that she had great 'portpieces shooting 11 in. high'. An 11-in. piece would, on the same ratio, throw an iron shot of at least 140 lb., and its weight could not be less than 5 tons.

So much for the upper limit of the murderer. From the close connexion between it and the curtow (see p. 264 above) it is likely that, in the main, curtows and murderers were made of the same calibre, if only to simplify

¹ It is certain that at a later date the murderer became a small piece. Query, When? Cf. 1545, *L. & P.*, Vol. xix, pp. 580-1, where there is a mention of 'mynches' (*sc.* mitches) for murderers. Unless small, they could not have been mounted thus. [For L. G. C. L.'s definition of 'mitch' see below, p. 284.]

the supply of shot. We may therefore suppose the usual 'great murderer' to have been a 50-pdr, corresponding to a double curtow, and most of the pieces to have been 35- and 24-pdrs, corresponding to curtows and demi-curtows. Such guns would weigh about 36, 25 and 17 cwt. A few murderers were mounted on the middle deck aft in some ships, a position corresponding to the later quarter-deck. Seeing that they may have weighed as little as 17 cwt., this ceases to seem remarkable.

There was no hard and fast distinction between the 'great' and the normal piece. The line seems to have been drawn according to the fancy of the surveyor, what one man called murderers being great murderers to another. It seems likely also that a piece which would be merely a murderer in a great ship would be a great murderer in a small one: and so too with other types of guns.

III. *Stone-gun*

This name is not found much after 1515, though guns shooting stone continued to be used at least till the end of the century. The stone gun was a very old type, and there is good reason to believe that it had varied little for a long time before it dropped out of use. It was a short, light-made, built-up iron piece of large calibre, its chamber being of much smaller bore than the chase. A piece in the Rotunda at Woolwich, described in the catalogue (I. 1) as a bombard of the early fifteenth century, is probably typical of a great stone gun. If it is correctly dated, its owners probably called it a bombard: but if, as seems to me more likely, it belonged to the last quarter of the fifteenth century, it is almost certainly a stone gun. Its chase is only 2 ft. 10 in. long, and over 15 in. in bore, answering to a stone shot of at least 140 lb. The powder chamber is 16 in. long [14 in. in Rotunda Cat.] by 3.4 in. bore, with a capacity of about $3\frac{1}{2}$ lb. The 'present weight' of this gun is 6 cwt.; but the weights of chase and chamber are not stated separately.¹

There is not very much precise information available about these guns. We find them divided into 'stone-guns' and 'great stone-guns', with nothing contemporary to show where the line was drawn. It seems likely, however, with them as with the port-pieces of a later date, that the division was at a bore of about 6 in. Unfortunately we have at present no particulars

¹ [This is the 'Bodiam Mortar', dredged from the moat of that castle. Dr ffoulkes has an illustration of it (*Gunfounders*, p. 23). Like the Rotunda cataloguer, he dates it early fifteenth century—or even late fourteenth. He calls it a 'mortar'—a tempting appellation, for its general appearance approximates closely to the type which later received that name. To me, however, it seems to belong to a period before such distinctions existed and should therefore be regarded as a prototype of both bombard and mortar. L. G. C. L.'s 'late fifteenth century' is hard to accept, even when one adds—what he omits—the strongest argument for it: though its exterior is of built-up wrought-iron bands, its interior lining is of *cast iron*.]

at all for 'great stone-guns'; and for the smaller 'stone-guns' we have weights and cost, but no dimensions. From what we have, however, an approximation towards the dimensions can be made.

Thus in 1513 Cornelis Johnson made a parcel of 14 stone-guns with 28 chambers, which were sent to the *Katherine Fortileza* (Stowe, 146, ff. 42*b*, 43*b*). The halls of these guns weighed 25 cwt. 2 qr. 10 lb., the chambers 12 cwt. and 25 lb., and the accessories 14 cwt. 3 qr. 11 lb., with an average of 3 cwt. 3 qr. 1 lb. per gun. A trifle earlier he had made two other stone-guns weighing, together, without their chambers and accessories, 3 cwt. 1 qr. 14 lb. (*M.M.*, Vol. XIII, p. 368), which were therefore rather smaller; and as these were for a 'bark' of about 100 tons, it is likely that they were nearly as small as any in use.

If a few moderate assumptions are made, it is easy to calculate the proportions of a stone gun with fair degree of accuracy. The smallest stone shot that has been found is $4\frac{1}{2}$ in. in diameter. These 14 guns of Johnson's making were small, but apparently not the very smallest, so that their bore may be set down as 5 in. As for length, they were undoubtedly short, but had probably, as all other types of gun had done, grown in length since the fifteenth century. Thus it is probable that they had reached a length of some seven calibres besides the chambers. A 5-in. gun would therefore have a chase about 3 ft. long.

From these assumptions it is easy to calculate that the hall, having the cylindrical form common to the early built-up guns, would have a mean thickness of metal of $1\frac{1}{4}$ in., which would allow of longitudinal staves of about $\frac{3}{4}$ -in. thickness, with closely spaced shrunk-on hoops of similar thickness. A gun of this description would fulfil the requirement of weighing about 2 cwt. for its hall: the chambers, of about 1 cwt. apiece, were probably of quite small bore. A chamber of $2\frac{1}{2}$ -in. bore, $2\frac{1}{2}$ -in. thickness of metal and 12 in. inside length would weigh about 1 cwt., and would take a powder charge of $1\frac{1}{2}$ lb. This seems about what might be expected, for we know that stone guns used very low charges, in order to avoid blowing the shot to pieces.

The making of these old weak stone guns seems to have gone out of fashion as the process of casting iron developed. In the few years before 1515 foundrymen had got as far as casting whole guns, some of them apparently of considerable size. These, unfortunately, are not usually assigned to particular types, being merely described as 'cast-pieces'; and it is a fair inference that the omission to call these cast guns 'murderers' or 'stone guns' or what not, may have been due to their not conforming strictly to any recognized type. Looking to the course which development took, to the disappearance of both murderers and stone guns, and to the

survival of but one type of short, chambered gun in the new 'port-piece', apparently intermediate between the two, it seems likely that these early cast guns were relatively light, designed for no heavy charge, and eventually replacing the stone guns, though their name points to their affinity with the murderers, which were mounted in the ports.

A paper of c. 1555 (Cecil's '*Memorandum Book*', *Lansdown MS.* f. 118) says that port-pieces were then of from $5\frac{1}{2}$ - to 12-in. calibre. The greatness of the upper limit points strongly to the ancestry of the stone guns, especially as Cecil has set them down as 'shooting stone'. Similarly, he describes 'Fowlers', whose name is not met with in the early part of Henry VIII's reign, as also 'shooting Stone', and says they were of from 3- to $5\frac{1}{2}$ -in. bore.

It seems evident, therefore, that the 'great stone guns' evolved into the later 'port-pieces', and the 'stone guns' into 'fowlers', the system of construction being altered in the process from wrought to cast iron. It is doubtful if it was worth while to shoot stone from the smallest of these guns, for a stone shot from a 3-in. gun would weigh only about 1 lb., and from a 4-in. gun about 2 lb. As has been noticed, no shot so small as this has been found. For this reason it is much more likely that the fowlers, and indeed their ancestors the smaller stone guns, were usually used to shoot 'dice of iron', often described as 'hail shot'. These dice were commonly made in two sizes, of $1\frac{1}{2}$ -in. side, presumably for the larger guns, and rather under 1 in. for the smaller guns. The name 'hail-shot piece', frequently met with after—but not before—1515, apparently connotes the smaller stone guns, and confirms the supposition that to fire stones from them was not worth while.

In 1587 port-pieces still fired mainly stone—and never iron. Four of brass and 28 of forged iron were issued to Portsmouth in March 1587, each with two chambers, and 480 shot (stone) for all: i.e. 15 rounds per gun. The corresponding allowance for guns firing iron shot was 27, *plus* two crossbar. The smaller number for port-pieces seems to suggest that they fired also dice, or some form of small shot: but there was no issue of any such for them at this time.¹

¹ [By 1595, when all ship-guns were being classified under the four headings of 'cannon', 'perier', 'culverin' and 'mortar' (in that order), both port-pieces and fowlers came after 'cannon-perier' under the 'perier' head: but, unlike the cannon-perier, they were both breech-loaders—still—with separate halls and chambers (*Vieu & Summary*, 31/3/1595, MS. 80, N.M.M.). Available for the Queen's ships there were 37 complete port-pieces with 33 spare chambers, and 99 complete fowlers with 79 spare chambers. They were certainly not, even yet, ironshot-throwers, and, though doubtless capable of throwing stones, it is certain that they normally fired 'discs of iron', 'hail-shot' or 'murthering shot encased in bagges or lanthornes'. Indeed, the smaller fowlers almost certainly threw nothing else. So L. G. C. L. seems to be right at least in this—that both sorts were too small guns to make stone-throwing worth while. The average port-piece weighed 1157 lb., the average fowler only 742 lb.].

We have at present no dimensions, or even costs, for the great stone guns. One thing seems certain, that the line of demarcation between great and small was very loosely drawn. Often, apparently, it was not drawn at all (cf. Table 1, p. 256), a ship being credited with so many 'stone guns'. This is so, for instance, in the case of the *Mary Rose*: 'stone guns 26; top guns, 3; chambers, 75' (*S.P.* 1/9, f. 237); but in so well-armed a ship it is idle to suppose that all these guns were small in the later sense, i.e. below 6-in. calibre.

Similarly with the *Henry Grace à Dieu*: the inventory and the partial distribution list (*S.P.* 1/7, f. 179*b*) give her only two 'great stone guns' and 22 'stone guns': but on the other hand Cornelis Johnson, the King's iron-gun maker who made the guns, and William Bonython, the purser of the ship, who received them, described 22 of them as comprising 16 'great stone guns' and only six as 'stone guns'. The remaining two are not accounted for in the list, presumably having been delivered at some other time: and it cannot therefore be decided whether they were great or small. As likely as not they may have been the two very big guns which figure in the inventory and distribution as 'great stone guns'.

Even assuming the missing two to have been small, then, we find that the *Henry* really had 16 great and 8 small, instead of the 2 great and 22 small with which she has hitherto been credited. This therefore adds 14 (or possibly 16) to the number of heavy guns usually ascribed to her, giving her a total of 43 heavy guns (or 45) to 141 (or 139) light.¹

If made on the same proportions as the 5-in. gun already described, stone guns of 6, 7, 8, 9, 10, 11, and 12 in. would, for hall and chamber, weigh approximately 7, 11, 16, 23, 32, 42 and 55 cwt., throwing stone shot of 8, 14, 20, 27, 37, 42 and 64 lb. respectively. These evidently deserve to be classed as heavy guns, for, in spite of their low velocity and penetration, the mere fact that they continued to be carried showed that they were considered efficient. They may be reckoned as the carronades of the period.

IV. *Top guns and capstan guns*

In a few ships these are listed separately, under these names: in some it is stated that so many stone guns, and occasionally serpentines, were in the tops; but in others they are not mentioned, it being left to us to infer that anything suitable was taken from the general stock of the armament

¹ [This evidence seems so incontrovertible that I have incorporated it in the table opposite p. 257, and adjusted the totals to correspond. L.G.C.L. made a partial change only, inserting his new figures in brackets on the *Henry*'s horizontal line, but leaving the totals unchanged.]

for the purpose. No doubt the smallest guns were used, and they were provided with an extra number of chambers. How small top-guns might be is seen from the following entry in an account by C. Johnson (*Stowe*, 146, f. 28 b): 'The *Katherine Fortileza*: a stone gun for the main top with four chambers; weighing 1 cwt. 1 qr. 12 lb.; a top gun for the fore top with four chambers, weighing 1 qr. 18 lb.; a new small gun made for the mizen top.' The *Great Elizabeth* of 900 tons had in her main top six single serpentines and two stone-guns with 30 chambers; in her fore and main-mizzen tops each one stone-gun. Ships of 300, 400 and 450 tons had in their main tops only one or two small 'top-guns', i.e. stone-guns, and none elsewhere. Antoine de Conflans set down as the ideal top armament, for a ship of 500 tons, one 'perrier' (i.e. stone-gun), with 24 chambers, and 10 hakbusses. In English ships the usual number of chambers per top-gun seems to have been about four.

'Capstan guns' were not pieces on special revolving mountings, but small guns fixed to the capstan itself. The *Katherine Fortileza* had 'a stone gun new stocked to the capstan: another stone gun new stocked to the same capstan' (*Stowe*, 146, f. 28 b). It is of some interest that this ship was Spanish built. Perhaps Spanish ships had capstans in the waist; English-built ships not. But it may be noted that the *Mary Rose* had a 'capstan gun with two chambers' (*S.P.* 1/9, f. 235). Probably not all ships had them, as many seem to have had all their capstans (usually three) below deck.

V. Pot gun

These were merely small mortars. They were mounted in a few ships; e.g. the *Peter Pomegranate*, on 'the brest of the smale deck, pottguns, 4, with 8 chambers'. The small deck seems to have been a poop: the breast of a deck was its fore bulkhead. There even seem to have been muzzle-loading pot guns (*E.* 101/57/(2), f. 10): 'Two pottguns, whole without chambers.' It is likely that the use of these guns on board ship was merely experimental, and that it was soon discontinued.¹ Their weight must have been very small, well under 1 cwt., for even a brass mortar of this date weighed less than 1½ cwt. (*E.* 101/60 (29)).

All the above, perhaps even including the bombard, but not the basilisk

¹ But see *L. & P.* Vol. xix, p. 536 (2): 'One pott gun of brass (at Carlisle).' This is in 1545.

[The name lingered much longer even than 1545. It was clearly still current as late as 1622, though perhaps, by then, it merely signified the weakest piece of ordnance on board. Cf. Sir Richard Hawkins's *Observations*, p. 190, where he writes, urging the shortest possible range, '... neither must he [the gunner] spend his shott nor powder, but where a pot-gun may reach his contrary: how much the nearer, so much the better'.]

which was certainly 'long', are of the short gun type.¹ They may be summarized thus:

Over 15 calibres	Bombard
10 to 15 calibres	Curtow, murderer
5 to 10 calibres	Stone-gun
Under 5 calibres	Pot gun

B. LONG GUNS

The names of the long guns found on board ship at this period are, in the chronological order of their introduction, serpentine, sling, falcon and culverin: to which may be added the harquebus, though this is usually considered as a hand weapon. The meaning of the word serpentine is evident: sling has nothing to do with the missile weapon of David, being merely an anglicized form of the German *Schlange*, a snake: culverin, through the Italian *Colubrina*, derives ultimately from the Latin *Coluber*, a snake.

Although in the main all these names connote the same type of gun, viz. the long piece of flat trajectory,² and although all were in use in England at the same time, there is less confusion between them than might be expected. That this was so seems to be because each name, as well as the implication of length, carried with it the meaning of a particular method of construction; it was only incidentally that an idea of the size of the pieces became attached to the names: and indeed, in the case of the sling, that development does not seem to have taken place. Abroad there was apparently more confusion: in Germany, for example, the sling was confused on the one hand with the serpentine and on the other with the culverin. The

¹ [L. G. C. L. was doubtless right in dividing all early Tudor guns into the two categories of 'long' and 'short'. But by the end of the century a 'medium' category has appeared between 'long' and 'short', and a 'very short' below 'short'. The 'long' group comprised the 'culverins', whose average length, in calibres, was about 32. The 'medium' were the heavy battery-pieces, cannons and demi-cannons (c. 18-22 calibres). The 'short' were the 'periers' (8 calibres or less): the 'very short', the mortars (1½-3 calibres). By this classification, L. G. C. L.'s bombards would be 'medium', stone-guns 'short', and pot-guns 'very short'. Curtows and murderers would be on the borderline between 'medium' and 'short', with all but the shortest counting as 'medium'.]

² ['Flat trajectory' must, of course, be taken very relatively. The 'long' gun had a longer 'point-blank' range than the 'short' gun. But (without becoming involved in the vexed problem of *absolute* range) we may say that when, towards the end of the century, evidence begins to accrue for *relative* ranges, the point-blank of the longest-ranging gun (the culverin) was to that of the shortest-ranging (the cannon-perier) only as 5 is to 4 (see *M.M.*, Vol. xxviii, pp. 40-2). The difference may have been greater in early Tudor times, but there is, I think, no evidence for it, and it does not sound likely.]

German were averse from adopting foreign names, preferring to translate them. Thus with them *Schlange* was probably a conscious translation of *Colubrina*.

I. *Serpentine*

There is no doubt that, in England, most serpentines were small, but that some were large. Whether it was so from the first, the hall of the iron serpentine was in this period forged in one piece,¹ a fact which necessarily limited its size. There are three accounts extant for the making of serpentines by Johnson in 1513 (*Stowe*, 146, ff. 33, 41, and *M.M.*, Vol. XIII, p. 368), and all these show guns of the same size. The hall with two chambers weighed about 2½ cwt., the chambers together weighing half as much as the hall, and the accessories weighed 1 cwt. The timber of the stock was additional, so that probably the whole weight of the gun mounted was about 4 cwt. In these three parcels there were 70 guns, some of which went to a bark, some to 'galleys' of 80 tons, but 48 to the *Katherine Fortileza*, a great ship. This distribution suggests that we have here something like a standard type of iron serpentine. We do not know the calibre of the guns, but it is likely by comparison that their lead shot was of about 1½ lb., which would give them a bore of 2 in. With a length of 30 calibres the hall would be 5 ft. long; and such a hall, with a mean thickness of metal of 1¼ in., would weigh about 1¾ cwt., thus corresponding closely to those made by Johnson.

The purpose of the very numerous serpentines seems clear, at any rate of the small ones.² With the great gun in broadside it was virtually impossible to hit even a large target except at very close range. Probably hits would be few even at a cable, unless in very smooth water. The range of the serpentine was greater than that of the murderer, etc., its rate of fire higher, and, being mounted as a swivel (this is assumption) it was much easier to train, and therefore more accurate. It is likely, therefore, that the size of serpentines was decided by the thickness of the upper works of the ships to be attacked; and that if a reasonable proportion of its shot went through the topsides of the target at a range of 100 or 200 yards, the opposing ship would find it very difficult to fight even her breech-loaders, and impossible to load heavy muzzle-loaders outboard.³ Henry VIII's later change to all muzzle-loader heavy guns meant that he intended to get the necessary volume of fire from them, supplemented by the smaller breech-loader quickfirers. It may be that the later system of standing off to load out of range began before 1540. If so, it must have been developed by privateers,

1 [But see p. 274, note, where L. G. C. L. himself casts doubt on the statement.]

2 [The whole of this paragraph is a later addition.]

3 [For L. G. C. L.'s rather novel views on outboard loading, see *M.M.*, Vol. XIV, p. 339.]

as there was in the war of 1545 no squadron or fleet action in open water.^{1, 2}

It is a difficulty with iron serpentines that there were several sizes of them, with little or nothing to show what difference there was between them. Those in the above parcels were all called by Johnson merely 'serpentines'; but, following the history of the guns, we find from the inventories of the ships that those put on board the galleys were afterwards described as 'double serpentines'. In the case of the *Katherine Fortileza* no conclusion can be drawn, for when her inventory was made she had on board no more than 41 serpentines in all, of which 25 were classed as 'double', 15 as 'serpentines' and one as 'small'. She had evidently in some way got rid of many of the 48; but whether the 25 or the 15 represented the residue of them is unknown.

The descending scale of iron serpentines is 'double, or big, serpentines', 'serpentines', 'single serpentines', 'small serpentines'. Sometimes all categories are present in the same ship, as in the *Peter Pomegranate*; which is satisfactory. Sometimes there are 'double serpentines' and 'serpentines'; sometimes 'serpentines and single serpentines'; once, in the *Great Elizabeth* of 900 tons, there are only 'single serpentines' and 'small serpentines'; which seems unlikely. Sometimes, as in the case of the *Henry Grace à Dieu*, all are grouped together under the generic name of 'serpentines'.

In the circumstances it is impossible to be precise: it is possible that 'double serpentines' were bigger than those of $3\frac{1}{2}$ cwt. which have been described; but at present it cannot be proved. It is quite certain that there were smaller guns than these, for these cost £1. 17s. 6d. for the hall and chambers, and prices as low as £1 for serpentines are found (*L. & P.*, Vol. 1, p. 1704 (3)). Almost certainly these guns at £1 apiece were 'small serpentines'; the smallest made, for their cost was no more than that of the larger arquebuses. We have (*Stowe*, 146, f. 35) 'Great Hagbusshes, stokked', at 23s. 4d. apiece; and smaller ones at 15s. Hand guns, it may be mentioned for comparison, cost from 6s. to 9s. It seems likely that large arquebuses may have been called small serpentines, or vice versa; for in some ships the distribution of armament shows small serpentines mounted on the uppermost deck, while in others we find stocked arquebuses placed there.

Towards deciding what was the natural upper limit of size of iron serpen-

1 [A still later addition.] This is doubtful. The murderer did not last, nor did the curtow on board ship, both giving way, apparently in the 1530's, to longer-ranging muzzle-loaders. It is doubtful if the 1515-35 change can be satisfactorily illustrated without more detailed evidence.

[An even later addition.] Yes: the passage marked [i.e. the whole paragraph ending 'in open water'] is a good instance of theorizing in advance of the evidence (5 May 1945).

2 [He is guilty here of a rare factual slip. There was a full-scale fleet action off Shoreham on 15 August 1545.]

tines, it would be of use to know to what tasks the skill of the smiths of the period was equal.¹ They made anchors, and they made gun chambers certainly up to 8 cwt. (*M.M.*, Vol. XIII, p. 370); from which, though doubtless the chamber of a gun was easier to forge than the hall, it seems likely that halls of a good deal more than 2 cwt. should have been possible to them. If this was so, we should expect to find that the 'big, or double, serpentines' which formed a high proportion of those on board the ships, were guns of some size. It seems not at all unlikely that they may have weighed at least 5 cwt. for the hall and chamber, throwing a 3 lb. shot.

Brass serpentines, of which a few were carried, were undoubtedly larger. We have seen that for land service they might be as heavy as demi-curtows (above, pp. 258-9), and that a batch of two dozen made in 1510 weighed 11 cwt. apiece (*Ibid.*). With a 6 lb. lead (or 4 lb. iron) shot, these guns took a powder charge of 4 lb.: and by the usual proportion of chamber to gun, these chambers should weigh *c.* $2\frac{1}{4}$ cwt. each. We have also a mention of 10 more in 1514 which weighed 10 cwt. apiece (*E.* 101/60 (29)); besides which, the ship-lists almost invariably mention that the brass serpentines were mounted on truck wheels, which was never the case with the iron.²

It seems likely, therefore, that, about 1512, serpentines on board ship comprised:

- (1) Cast brass pieces weighing not less than 10 cwt. each for hall and chambers.
- (2) Great or double serpentines of wrought iron weighing more than $2\frac{1}{2}$ cwt. each, probably a good deal more in big ships.
- (3) Normal-sized pieces of $2\frac{1}{2}$ cwt., apparently called indifferently double or single according to the size of ship they were in.
- (4) Small serpentines no bigger than, and perhaps identical with, large harquebuses.

II. *Harquebus*

That the large harquebus was a breech loader with chambers is proved by Cornelis Johnson's accounts (*M.M.*, Vol. XIII, p. 368). It is not known how big were the biggest put on board ship, but for land service there were in 1514 'Di hacbusshes called the new devised ordynaunce', which were mounted on trestles, and were so big that three of them made a cartload (*E.* 101/57 (2), f. 19). But what was the cart? Was it a gun-carriage with

¹ I seem to have assumed here that serpentines of Henry VIII's reign had the hall forged in one piece, not built up of staves and hoops as in the old construction. This may be right, but it should be proved. I think the statement is based on something definite, but I forget what.

² The 4-pdr serpentine of 11 cwt. seems to correspond closely to the 4-pdr *coulevrine moyenne* of 11 cwt. (*De la Roncière*, Vol. II, p. 495, n. (2)).

a shield such as is shown in the picture of the Cloth of Gold? These mounted two guns, very long and light, and almost certainly harquebuses. These are well shown in Charles ffoulkes's *Gunfounders of England* [page 31: caption, 'Gun-carts. The encampment at Marquison']. That these were demi-harquebuses suggests that there may have been others still bigger.

III. *Sling*

The name of this piece does not occur, so far as has yet been noticed, before Henry VIII's reign: but as it was usually built up on the old barrel-and-stave construction, it seems likely that it, or something very like it, may have existed at least as early as the previous reign. If this supposition is correct, it is likely that, in its early days, it was described as a serpentine; and consequently that, among the serpentines great and small of Henry VII's ships, there may have been some slings. It differed from the built-up iron murderer in being longer and of smaller calibre, for it was not a stone-shooting gun.

Being a long gun, it needed a large charge of powder, which demanded a heavy chamber; and the chambers of those guns of which we have particulars are surprisingly heavy (*Stowe*, 146, f. 42, for 14 guns; *ibid.* f. 12 *seq.*, and *M.M.*, Vol. XIII, p. 368, for three others):

No.	Hall			2 chambers			Ironwork			Total		
	<i>c.</i>	<i>q.</i>	<i>li.</i>	<i>c.</i>	<i>q.</i>	<i>li.</i>	<i>c.</i>	<i>q.</i>	<i>li.</i>	<i>c.</i>	<i>q.</i>	<i>li.</i>
14 (each)	5	3	17	9	1	0	0	2	24	15	3	12
1	10	3	6	(hall & chambers only)						<i>c.</i> 11	1	0
1	13	1	13	15	3	26	(<i>c.</i> 1	1	0)	<i>c.</i> 29	2	11

The 15th gun was made whole without chambers, and weighed 21 cwt. 2 qr. 24 lb.

The pieces in the above table are all described as 'long slings', and the qualification implies a comparison with other slings which, if still belonging to the class of long guns, were considerably shorter. It so happens that we have three extant examples of these shorter pieces, raised from the wreck of the *Mary Rose*. The one at the Tower is rusted all to pieces. The smaller one at the R.U.S.I.¹ is proportionately longer, and has a light built-up chamber. The largest of them, at the Rotunda, is described in the catalogue (I. 10) as 9 ft. 8 in. long with a calibre of about 8 inches. The chamber is not described, and presumably was not recovered when the hall was raised.²

¹ [Now at the National Maritime Museum.]

² [The next two items (11 and 12) are 'wrought-iron chambers...recovered on the same occasion'. No. 15 is also an odd chamber, belonging to 'a breech-loading gun of large size, of time of Henry VIII'. None of them, presumably, fit no. 10.]

As we know from the lists of the distribution of guns on board the ships that slings were mounted both in the stern as chase-pieces and on the broadside, it may fairly be decided that the long slings were the chase guns, the short ones those for the broadsides.¹ It will be noticed that the Rotunda sling is not very much longer than, and of the same make and calibre as, a great murderer. In this experimental period, in fact, types tended to run into each other, to the bewilderment not only of us, but of the men who had to find names for the guns. Thus, while there could be no doubt about a long sling, a surveyor might very well be doubtful as to what he should call a short one, finally writing it down in despair as a 'great gun'. This was actually done in the case of the *Mary Rose* (*S.P.* 1/9, ff. 235, 237), and it is not stretching probability unduly to suggest that the actual gun at Woolwich may be one of those two which, in 1514, were termed indifferently 'great guns' and 'slings'.²

Though the wrought-iron built-up gun with heavy chambers was the commonest, and almost certainly the original, type, there were in 1512-15 slings of other makes. As has already been seen, some were whole, without chambers, though this does not necessarily mean that they were muzzle-loaders (see above, p. 262). Slings of brass are met with: the *Great Elizabeth* had two demi-slings of brass, with chambers, mounted on her orlop as stern-chasers (*E.* 36/13, f. 46, and *S.P.* 1/9, f. 243); and it is not impossible that some of the cast pieces, to which specific names were not put, may in fact have been short slings. (Cf. *E.* 101/57 (2), f. 10: 'Item, a cast piece of yron called a slyng withoute chamber'.)

There were much larger slings than those hitherto mentioned. Early in 1514 there were in the King's storehouse at Erith two slings (*E.* 101/57 (2), f. 10): 'first, a gret pleyne slynge holle of iron cont' xxii foote of lenght with stocke and wheles unshod. A slynge of yrne rynged cont' xx foote di besides the ii chambres whereof one is broken, and a holle stocke.' The storehouses at the time of this paper contained little but ordnance and stores which were being collected for the *Henry Grace à Dieu*, then nearly built; and the great sling with the broken chamber can confidently be identified with the great sling with one chamber which the *Henry* had. There seems to me to be no reason to doubt that this sling, and the great bombard already mentioned (p. 261) were the stern-chasers on the lower orlop of

1 [The catalogue, it must be observed, does not mention the word 'sling' at all: No. 10 is a 'wrought-iron breech-loading gun'.]

2 [A late addition.] I do not think this will do, in this particular case, for the *Mary Rose*'s guns were called 'Di slings'. As 'di slings' were also mounted in chase, as well as on the broadside, it is fairly certain that the qualification 'di' (sometimes anglicized to 'half') referred to the calibre, not to the length. There is nothing to show where the line was drawn; and guns which were evidently quite small for slings are commonly described merely as 'slings'.

that ship. It is evident, from their length, that such guns could only be mounted in chase.

There is at present nothing to show to what use the 'whole great sling' was put; it cannot be identified on board any of the ships of which we have lists.

It is possible to calculate approximately the weight of the long sling with rings, i.e. of barrel 'hoop and stave' construction. The *mean* thickness of the metal of the chase, staves and rings cannot have been less than 2 inches. Assuming that this was an 8 in. gun, which would give the chase a length of about 30 calibres, we get a mean section of 63 square inches of metal; or, in a length of $20\frac{1}{2}$ ft., 15,498 cu. in., or 9 cu. ft., which weigh 36 cwt. This is probably placing the thickness of metal, and the weight of the gun, unduly low.

What sort of chambers would such a gun have? By the analogy of those tabulated on p. 275, it might be argued that each chamber would weigh more than half as much as the gun itself; but this seems impossible, for it would make the chambers weigh at least a ton apiece. It is impossible to see wherein the advantage of such heavy chambers would lie. They would be extremely difficult to handle, and the rate of fire would probably be slower than that of a piece without chambers. It is impossible, however, to see how a chamber for such a piece can have been of manageable size. An 8-in. gun is a 60-pdr, and, allowing for the difference between a light built-up piece and a heavy cast gun such as a curtow, it seems unlikely that a sling can have used less than half the powder charge of the cast gun. This allows the weight of charge to be put at 30 lb.; and, as the least weight of chamber per pound of powder seems to have been $\frac{1}{2}$ cwt., it is likely that a chamber for this long 8-in. sling must have weighed at least 15 cwt.

There is one entry, however,¹ which is very puzzling: 'a new chamber for a long sling, 0 cwt. 59 lb.' (*Stowe*, 146, f. 31). It seems impossible that this can be right, especially for a long sling, which needs a heavy charge. Such a chamber would take only 1 lb. of powder. It seems possible that the clerk either wrote 'chamber' for something else, perhaps for 'breech'; or that the chamber was mended, not new. But it is also possible that this may have been a very small sling, such perhaps as that which was mounted on the 'small deck', or poop, of the *Christ*.

By reason of its length and weight,² especially when mounted, as it usually was, on a bed, the great sling must have been virtually, if not quite, incapable of being run in. And, if it had been, the length of the rammer, being in some cases well over 20 ft., must have made it extremely awkward to load by the muzzle. Thus breech-loading must have been essential; and

¹ [This paragraph is a later addition.]

² [And this a later one still.]

it is not unlikely that the very great weight of the chamber may have suggested the substitution of the 'breech'. This breech seems to have been of relatively late introduction, after 1500. The chamber dates from the fourteenth century.

Probably we have here one of the causes which led to the disappearance of the sling. Though the evidence of the guns recovered from the *Mary Rose* shows that slings of the old type were still in use as late as 1545, it is doubtful if the attempt to make such large chambered pieces was repeated after 1515.

There seems little doubt¹ that, late in the reign of Elizabeth, slings were small breech-loader pieces belonging to the secondary armament (*N.R.S.*, Vol. xi, App. A). It is difficult, however, to see how so great a change in the meaning of the name can have come about: and it is also remarkable that in the lists we have of ships' armaments from c. 1580 to 1620, slings find no place. In 1567 (*ibid.* p. 311) many $\frac{3}{4}$, $\frac{1}{2}$, and $\frac{1}{4}$ slings were listed as obsolete pieces of forged iron—presumably pieces of the old type, survivals from Henry VIII's reign.²

IV. Culverin

There is no doubt that the sling gave place to the culverin, and smaller guns of the culverin type; which, from their first introduction, were always cast muzzle-loaders of brass until, probably some years after 1515, the iron-founders became capable of producing a cast-iron gun of this size. The culverin was still, evidently, an experimental piece. In the 11 great ships there are only six of them, three described as 'culverins' and three as 'great culverins'. There was also one culverin in one of the 80-ton galleys, no doubt as a bow-chaser.

It is not to be supposed that at this date the calibre of the pieces was standardized: the name connoted a type, not, as later, a 17- or 18-pdr. Nor have we evidence as to the length of these guns. Later writers speak of culverins of 30 calibres or more in length; and, knowing as we do that with the first introduction of long guns, there was a tendency to make them unnecessarily long, we may believe that some at least were made as long as this. The very long culverin-type gun in Dover Castle, known as 'Queen Elizabeth's pocket-pistol', was made in 1544, and illustrates the length to which this tendency was carried. It is of $4\frac{3}{4}$ in. bore—i.e. a 12 pdr—and is, without the cascabel, 23 ft. long, or 58 calibres. It was not intended

¹ [This paragraph is a later addition.]

² [Later still.] I have been through all indexed references to guns in *L. & P.*, 1545 (vols. 19, 20), and the only mentions of slings are: at Berwick; two half slings: stone shot for slings; at Pontfret Castle; quarter slings, 4. In these volumes there is no list of guns in the King's ships.

for use on ship-board; but that very long guns were used at sea is proved by a 6-pdr of some 40 calibres which was dredged up in the Downs in (?) 1914. It dates from Henry VIII's reign, and is in the Tower. There is no evidence, however, that culverins were mounted in chase; and a piece of 14 feet or more would be an awkward and unusual thing for the broadside of a ship of moderate size.

There is a bill for a 14-pdr culverin made in Spain for Henry VIII in 1518. It was of cast brass, and cost £51. 6s. 9d., besides its carriage to England (*L. & P.*, Vol. II, p. 4108). It is reasonable to infer from the cost that this gun did not weigh more than 30 cwt.; and it is interesting to know that the King had it bored bigger, though how much bigger is not stated.

In a partial list of the King's guns in 1514 there are two culverins of 67 cwt. each, two demi-culverins 'called by the King his minions' of 37½ cwt. each, and two others of 31 cwt. each (*E.* 101/60 (29)). Allowing roughly 2 cwt. of metal per 1 lb. of shot, these would be 34-pdrs (equal to curtows), 18-pdrs and 15-pdrs. Their bores would be about 6¾, 5½ and 5 in.; and their lengths, assuming them to have been of 30 calibres, about 17, 14 and 12 ft. It is not stated that these were sea-service guns, but they serve to illustrate those in the ships. For comparison it may be noted that the longest chase guns in the *Royal Prince* of 1610 were 18-pdr culverins of 53½ cwt., 13 ft. long, and 9-pdr demi-culverins of 36 cwt., 11½ ft. long. The broadside culverins ran from 8 ft. 4 in. to 9 ft. 5 in. in length, and from 39 to 47 cwt. in weight: the broadside demi-culverins from 8 ft. to 9 ft. 3 in. in length, weighing from 25½ to 31½ cwt. These were exceptionally heavy guns, and the period was that in which the weights of guns rose to a maximum (*SPD.* Jas I, 133/70). It is thus possible that the 'great culverins' in the *Henry Grace à Dieu* were as much as 32- or 34-pdrs.¹

There seems to be no reason for supposing that the name 'culverin' was applied in England at this date to the smaller pieces known abroad as 'bastard' and 'medium' culverins, the former corresponding roughly to our demi-culverins, the latter to our later 4-pdr minions. It is interesting to see the term 'minion' at this date. It then, clearly, did not connote a type, but a term of endearment applied by the King to two pieces which pleased him highly. The name, apparently thus casually introduced, was afterwards appropriated to the 4-pdr of the culverin type; but that was not within the limits of this period. Though the name 'demi-culverin' is found as early as 1514, it had not then been introduced into the ships.

¹ [Possible, but far from certain. In 1595 there were some very heavy culverins (up to 64 cwt.) and demi-culverins (up to 40½ cwt.) in the Queen's ships. These culverins were not, I am sure, anything like 32 or 34 pdrs. But L. G. C. L. may still be right because, by 1595, they would certainly be much more heavily metallated than the *Henry's* culverins.]

V. *Falcon*

This is the only other gun-name found on board ship in this period which survived the experimental stage. Falcons were almost invariably made of brass, and nearly, but not quite,¹ always 'whole' without chambers. The ordinary falcon was quite small, and in the first known instance of the use of the name in England is confused with the serpentine: 1496, 'Falconis or litell serpentines' (*O.E.D.*). In 1514 I find 13 falcons together weighing 33 cwt. 3 qr. 3 lb.; and one falcon with a chamber weighing 2 cwt. 3 qr. 2 lb. We may take the weight of the falcon, therefore, as about $2\frac{3}{4}$ cwt., and of the falconet or 'di falcon' as about 1 cwt. or so less.²

But it is important to notice that a few 'great falcons' are mentioned: the *Gabriel Royal* and the *Katherine Fortileza* each had a pair, the latter, though a ship of 700 tons, having no culverins. We have the distribution of guns for the *Gabriel*, and this shows that her pair was mounted in the waist, which was one of the chief positions for heavy guns; also these guns were mounted on wheels, which are not usual for small pieces. It is instructive to notice that in the case of the *Katherine*, one list (*E.* 36/13, f. 36) calls these guns 'falcons'; but another and more detailed list (*S.P.* 1/9, f. 232 (b)) enters them as 'great falcons'. Neither shows where they were mounted. This not uncommon discrepancy shows how likely it is that among the 'falcons' distributed among the ships, 27 in number, there may have been other 'great falcons'. For example, the *Henry Grace à Dieu* is credited with only six 'falcons'. From what has been said it will be evident that, in such a ship, some of these 'falcons' may well have been 'great falcons'.

As to how big a 'great falcon' was, I have found no evidence; but, from the position of the *Gabriel's* pair, they were probably 6- or 9-pdrs: i.e. smaller guns of the culverin-type to which the later names of 'saker' or 'demi-culverin' had not yet been applied. Benvenuto Cellini (*Autobiography* (Everyman ed.), p. 78) says that at the siege of Rome in 1527 he used, of course with wonderful effect, 'a gerfalcon, a piece bigger and longer than a sacro, and very like a small culverin'. This sounds very like a 9-pdr. Also, De la Roncière (Vol. II, p. 495, note 2) mentions that in 1525 the *Grande Maîtresse* had, amongst other heavy guns (up to 80 quintals in weight) two falcons of 15 quintals and one 'coulevrine' of 11. The quintal was roughly the English hundredweight, perhaps a little less.

1 Cf. *E.* 101/57 (2), f. 166—'ij halfe fawkons of Ieren wt iiij chambers'.

2 [The average weight of the 63 falcons in the Queen's ships in 1595 was 885 lb.; and of the 17 falconets 394 lb. These are much heavier weights than L. G. C. L.'s $2\frac{3}{4}$ and $1\frac{3}{4}$ cwt.: but again they support the general thesis that all, or almost all, had increased in weight and size (though not necessarily in length). On the other hand, these 1595 pieces may derive from the 'great falcons' which L. G. C. L. is about to discuss.]

C. EXPERIMENTAL AND MISCELLANEOUS PIECES

I. *Cast pieces* of iron were being made at this date apparently of some size, and in various types: and this means that we have reached the beginning of the end of the old built-up guns. Information is lacking in detail; but from what has already been said it seems evident that the old built-up murderers and great stone guns gave place to the heavier cast port-pieces; and that the new cast-iron slings shortly became indistinguishable from guns of culverin type. The detail of these developments belongs chiefly to the period which follows 1515.

II. *Fair pieces*. The *Henry Grace à Dieu* had one 'fair piece of Aragonese making', of which nothing is known save that it was 'whole' and of brass. It was probably large, as it is not at all likely that an isolated small gun would be ordered from abroad. The probability is that it was a gun of the culverin type which did not seem to come strictly within the culverin category. We do not in fact know much at present about the experiments which were made with long cast pieces before they settled down into their recognized classification. The term 'fair' had perhaps some technical meaning, and did not merely represent a note of admiration. We find, for instance, 'fair falcons', as distinct from 'little' or 'demi' or 'half' falcons or falconets, which were often loosely described as 'falcons'—i.e. by their type, not by their size. Thus 'fair' seems in this context to carry the meaning of 'true', or 'full-sized'; and this consideration also points to the Aragonese gun's having been sizeable.

III. *Vice pieces*. There were four brass 'vice pieces' in the *Henry*, which are not found elsewhere. Clearly they were experimental, and did not make good. They were made in England, by Simon Gyles who seems to have been a Fleming: three are indifferently described as 'great' or 'long', the fourth as 'short' or 'small'. 'Vice' means 'screw', and it has been suggested that the screw was used, as in the nineteenth century, to elevate the gun. This does not seem at all likely: in fact, barely possible. Far more likely the guns were made in two pieces, the chase and a chamber, which were screwed together as was done in the great brass Turkish bombard now at the Tower, and in iron bombards with built-up chases like *Mons Meg*.

AMMUNITION

A list of the ammunition found in the *Mary Rose* on survey (*S.P.* 1/9, f. 237) will give an adequate account of what was in use during the war of 1512:

91 hagboches,
457 shot of iron great and small,

120 shot of iron with crossbars in them,
 1000 lead pellets great and small,
 900 pellets of lead for hagboches,
 1100 dice of iron,
 500 shot of stones great and small,
 74 arrows of wildfire,
 2 balls of wildfire,
 8 heads for arrows of wildfire,
 29 hooks for arrows of wildfire,

besides gunpowder, bows, body-armour, and gunners' stores such as ladles, stone picks, etc.

There are only a few items to be added to this list, of which 'cart tuches' is the most important. It is not clear what they were; for while the *Mary Rose* had a chestful, the *Henry* apparently had only 15, which cost the relatively large sum of 6s. 8d. In the *Mary Rose* list (E. 36/13, f. 62) they are described as 'cart tuches of gunpowder', from which perhaps it may be inferred that the cost of those in the *Henry* (S.P. 1/7, f. 175b) may be due to their having also been filled. Their cost of over 5d. each seems too much for a mere cartridge-bag, whether of cloth or paper; but unfortunately it is too low to allow of the filling of any but a very small cartridge. As cartridges were clearly unnecessary for chambered guns, it is evident that they must have been used either for muzzle-loaders or for breech-loaders without chambers.

The *Sovereign* had 'shott of yron with prykkes for schetynge of wildfire', (E. 101/5 (2), f. 30). These may have been the same as the 'balls of wildfire' in the *Mary Rose*. The description suggests something in the nature of carcasses, the shot apparently being hollow, and the 'prykkes' holes in it to allow the blast of the gun to set fire to the composition. It would seem likely that the burning of the *Regent* (10 August 1512) suggested that wildfire was a dangerous weapon to use; for in the attack on Prégent's galleys (25 April 1513) in which he lost his life, Sir Edward Howard forbade the use of it (N.R.S., Vol. x, p. 159). This, however, seems to amount to no more than a recognition that it was inadvisable to ignite a ship which you intended to board. Probably also the burning of the three ships grappled together at Zonchio in 1499 was well known here, though in that case the incendiary weapons seem to have been darts or arrows.

'Casts of hail shot' occur in the lists, though 'hail shot pieces' are not yet found. If the hail shot were not identical with the 'dice of iron', they probably differed from them only by being smaller.

All great shot were still frequently called 'gun-stones': thus we find gunstones of iron and lead, though lead shot are more commonly called

'pellets'. Occasionally, even, though rarely, the term 'pellet' is applied to iron and stone shot (e.g. *S.P.* 1/9, f. 229). It is worth noticing, too, that in some ships the lead pellets for harquebuses were counted, in others not. Those counted were presumably for the larger pieces which, judging from their cost, may well have been big enough to throw balls of $\frac{1}{2}$ lb. or so. This was the weight thrown by the small guns of c. 1400.

I do not know if the term 'forelock' had, in its relation to ordnance, more meanings than one: but certainly at this date it meant the wedge which forced the chamber home into the breech of the gun. The entry 'cusshons of lede for forelokkes' (*E.* 36/13, f. 23), of which the *Sovereign* had 24, shows both what the forelock was, and that the cushion was placed between it and the breech to take some of the jar of the recoil. But certainly 'forelock' is a very awkward word. In addition to its use in gunnery, it was also a term of shipwrightry, of mast-making and of rigging, the material being timber, iron or rope.

GUN-MOUNTINGS

I have not paid much attention to this branch of the subject, being chiefly concerned to discover the weight of armament carried by the ships. The inventories give less help than might be expected, for in the majority of instances they do not mention the mountings at all. When they do, there generally seems to be some special reason for it: either that the mounting was broken or missing, or, more commonly apparently, because it differed from general practice. Also, some of the forms used convey little. The common name, as will be seen from Johnson's accounts (e.g. *M.M.*, Vol. XIII, p. 368) is 'gunstock', which seems to have been no more than a baulk of timber (usually elm) on which the gun was bedded and bound down. A raised flange in rear of the gun gave the necessary purchase for the forelock. For long guns, such as were used in chase, these were certainly used. They raise the gun very little above the deck, so that the lower sill of a chase-port could be put at merely one foot from the deck (*S.P.* 1/230, f. 203*b*). The broadside ports on the orlop had their sills at 2 ft. 3 in. from the deck, which is approximately the height given to them from as early as we have definite information down to the nineteenth century.

It is evident that guns fired from such ports cannot have been mounted in the same way as those mounted in chase; but whether a gun-carriage comparable with those in use later had yet been introduced cannot be said. Certainly the word 'gun-carriage' does not occur, though guns fired from these ports are sometimes described as mounted on wheels, or truckle wheels. Others were mounted on 'trestles', which are also left undescribed;

but as the 'murderers' of the orlop ports afterwards developed, as has been seen, into port-pieces, it may be that the trestles refer to a method of mounting similar to that which the port-pieces had.

I find in *Letters and Papers*, vols. 19 and 20 (1545) the following.¹ Vol. xix, p. 580: 'At Carlisle: 14 single and 9 double bases standing upon Mynches, each with 2 Chambers. 1 hagbusshe upon trundelles & 4 Chambers for it. Deficient 30 hagbussches upon crocke.' I understand that a Mynche is the same as a 'miche' or 'mitch'—a stirrup to take the trunnions of the piece; and that the crock is a pin or pintle on the gun, fitting into a vertical stock. I have not made a note of it, but I think that there are here also murderers with mynches. Unless by that date murderers were small, they could hardly be mounted upon stirrups as swivels. Vol. xix, p. 581: 'At Berwick: a sakar of brass mounted upon trittilles,' with her stock cut short for the ship: also nine falcons of brass similarly cut short. This suggests that early fortress mountings had long, and ship mountings short trails.

Accounts for the repairs of ships show² that at this date the plank of *overlops* was 2 and $2\frac{1}{2}$ in. thick, according to the size of the ship, while that of the *decks* was 3 and $3\frac{1}{2}$ in. Presumably the after-part of the nether overlop, i.e. in the gun-room, was laid with deck plank; but I have found no repairs to this part of any ship. I would suppose that the upper deck of all, i.e. the third counting from the barbican, and the second and third in the forecastle, according to the size of the ship, was laid with thin plank; for, commonly, the bulk, if not all, of the armament on these decks consisted of hakbusses, or of 'small serpentines', which, as has been seen (p. 273), were probably very little bigger than harquebuses.

WEIGHT OF ARMAMENT

Former writers, believing that murderers, slings, serpentines and other chambered guns were pieces of at most a few hundredweights, have seen no need to raise the question of what total weight of armament Henry VIII's ships carried. If they were right, the total weight would be so small as to impose no appreciable burden on the ships, and the question of overloading and crankness would not arise. It comes therefore as something of a shock to find that the war of 1512 brought this very question to the front. At the fleet's first setting sail from the Thames, a trial of sailing was made; and in reporting to the King on this, Howard complained of the *Christ*. She would bear no sail, he wrote, being 'overladen with ordnance', besides

¹ [A late addition whose place in the text is not indicated. As it still refers, however, to gun-mountings, albeit for small guns, this would seem to be the correct place.]

² [Apparently part of the original MS., but isolated on a page by itself.]

having tops too big for her. The tops, being armed with small guns, may fairly be considered as part of the armament.

We have the armament of the *Christ* in 1514. It may have been somewhat heavier in 1512; but in 1514 it certainly weighed over 20 tons, and may very well have weighed 28. Similarly, the *Peter Pomegranate*'s guns may have weighed anything between 30 and 37 tons; those of the *Great Elizabeth*, which seems to be a ship more lightly armed than many of the others, works out at 63 tons; and that of the *Henry Grace à Dieu* at 100 tons. So too with other ships, but four examples are perhaps enough to illustrate the point:

	Tons	Weight of guns
<i>Henry Grace à Dieu</i>	1500	100
<i>Great Elizabeth</i>	900	60
<i>Peter Pomegranate</i>	450	30
<i>Christ</i>	300	20

These figures, which do not include the weight of gun-mountings, are arrived at by assigning weights calculated from what has been written above as to the individual pieces carried. It is instructive to find how the proportion of one ton of guns to 15 tons of ship runs throughout these and other instances.

It seems therefore that this proportion, or something near it, was in 1514 standard practice, and represented what the ships could bear. It is considerably lower than that carried at the end of the sixteenth century, and still more so than that carried early in the seventeenth. But the reason is evident. The ships of 1515 carried only half a dozen guns on the lower orlop; all the rest were mounted on what we would call the upper deck, and in two, or sometimes three, tiers in the lofty fore and after castles. Such a distribution, in a ship already high-charged, did not make for stability. Approximately it would appear that Henry VIII's ships could carry only about two-thirds of the armament which ships of like size would have had 100 years later.¹ There can be no doubt that the change to heavier armaments began with the gradual reduction of the upper works, and with the mounting of a complete tier of guns on the lower deck.²

1 [A pencilled (latest) note.] This needs further qualification. The method of tonnage-measurement in Henry VIII's time gave much smaller results than would have been obtained from the same dimensions in the seventeenth and eighteenth centuries. Approximately, the ratio was c. 2 to 3: e.g. the *Henry Grace à Dieu* of 1500 tons was probably rather bigger than Nelson's *Victory* of 2165 tons. [If true, most significant. Query, is it true?]

2 Another feature to be reckoned with is that the crown of the lower orlop amidships was at, or very near, the waterline until the rebuilding of 1536-40, when it was raised 2 or 3 ft. according to tonnage. This appears clearly from the *Mary Gonson* specification, which is dated by the P.R.O., probably rightly, 1514. The *Henry Grace à Dieu*, if built in proportion to the *Mary Gonson*, as is likely, must have had three orlops, of which the middle one had no guns: and so too with the other very big ships.

NEW LIGHT ON THE MUTINY AT THE NORE

By Christopher Lloyd

THE following letters from a junior officer on board H.M.S. *Nassau* give what is perhaps the most vivid first-hand account of the daily events on a particular ship during the Mutiny of 1797 which has come to light. Apart from the narrative interest, they show how much substance there was in the grievances of the mutineers and how reluctantly most of them followed the lead of the ringleaders to have them redressed. They also show that this particular ship played a more important part in bringing the mutiny at the Nore to an end than has hitherto been suggested.

The letters are signed 'A. Hardy, Mid.', but the muster book describes him as Joseph Hardy, rated A.B., aged 31, born at Hickling, Notts. From his position in the list of officers it is clear that he was doing the duty of a midshipman. What is surprising, in view of his semi-literate style and almost illegible handwriting, is his age compared with that of the other midshipmen on board. What became of him is unknown, but he can never have passed his lieutenant's examination. The letters are addressed to his brother and his father, Henry Hardy, of George Street, Cork, and are now in the possession of Mrs Stuart of Radley College, by whose permission they are here printed.

The *Nassau* was a 64-gun ship with a complement of 431 men. She was part of Duncan's North Sea Fleet of 15 line-of-battle ships stationed at Yarmouth. Captain Edward O'Bryen took command of her on 28 April, when Vice-Admiral Onslow was still flying his flag in her. The ship's company had received no pay for 19 months, and a petition regarding this, as well as protesting against the tyrannical treatment indulged in by the 2nd Lieutenant, had already been presented. But when the men joined in the first outbreak of insubordinate cheering on board the flagship, *Venerable*, on 30 April, they told Onslow that they were only cheering in sympathy and had no grievances of their own.

On this occasion, Duncan's resolute behaviour prevented further trouble; but the view often expressed that it was the Nore ships who infected the fleet at Yarmouth cannot be substantiated in view of the fact that Duncan's ships had mutinied before the arrival of the Nore delegates on 25 May. Thus the log of the *Nassau* for 1 May reads: 'The people refused the beer and asked for grog; they were reprimanded and returned to obedience.

At 4 something similar. Condemned 14 butts of beer.' A few days later it is added: 'Threw overboard 1072 lb. cheese and 432 lb. butter in charge of the purser.' Obviously there was a good deal in the men's grievances and had the authorities acted quicker there might have been no trouble. Yet it was not until 8 May that the Admiralty told Duncan to take his ships to the Nore to be paid, and not until 11 May that a promise of better pay and provisions was read on board the *Nassau*. Duncan's own action on 13 May, when the *Adamant* mutinied and he went on board to hold one insolent fellow over the side with one hand, prevented further trouble on board the *Venerable* and *Adamant*, so that these were the only two of his ships which accompanied him to the Texel at the end of the month.

By that date the infection had spread throughout his fleet. On 18 May the *Nassau*'s log states 'Sam Wright, marine, was punished with 3 doz. lashes for theft, and Joseph Lynch 2 doz. for drunkenness and insolence to his superior officer'. It was on that day that the Admiralty expressed the opinion that the Spithead rising was over, though chaos reigned at the Nore. Nepean, the Secretary of the Admiralty, called on Duncan to use his ships against those at the Nore. Though the admiral reported that 'the fleet here continues to behave well' (which is hardly borne out by the following letters), he disapproved of the idea, and when Nepean repeated the suggestion on 27 May it was too late.

Letter I

20 May 1797 [Saturday]
H.M.S. *Nassau*

My dear Brother,

I Recd. your letter yesterday & only waited for that to write to you. I am sorry to say that we are in as bad a state here as you are at home—Mutinies almost every day & I daily dread the consequences of them & shall refer you to my letter to my father at the beginning of the Mutiny in the N. Sea Fleet. [Missing.] We remained quiet for some time but have broke out again; last Sunday the Admiral [Duncan] read them (our people) an Order that so many may go on shore at a time every day according to their wish, which I am sorry to say our Admiral [Onslow] must comply with; they all appear satisfied, only with this addition that they want to be paid; our Capn. satisfied them on that head, only one man a petty officer & one of my ship mates in the *Amphion* who spoke to both the Capn. & Adml. in a very disrespectful manner & would not hold his tongue—some of his ship mates dragged him away or I should not have answered for the consequences (the man was drunk).

The next morning when sober the Capn. sent for the man & told him to prepare himself to leave the ship and to go on board a Brig; he went & told his story to the ship's company, who all swore that he should not leave the ship. The Capn. called all hands aft & told them the impropriety of keeping this man on board & would get them into a scrape, for he was a mutinous fellow. The people did not care & the Capn. swore he must go & he would send him. The seamen were dissatisfied. The consequence was that the Capn. to hinder bad effects from it, was obliged to leave him remain on board. Since that time the people are very unruly, very little duty carried out & say amongst themselves that the Capn. shall be controlled by them & shall not do as he likes (you may easily judge to what a pitch our Navy has fallen).

Yarmouth is at present in an uproar: the seamen are committing great depredations beating &

evil treating all the inhabitants & breaking windows etc. so that no people venture out after dusk. Our ship, I believe all the fleet the same, in a state of intoxication from 2 to 8 of clock & at those hours can get nothing done but my coalling. We are indeed in a very dreadful state; God knows where it will end; even if peace is made (which I expect every month) the Kingdom will be in a state of rebellion; the seamen when paid off will committ Murder, robberies etc. while they remain in a body.

Thursday [May 18th].

Our Capn. used his prerogative by flogging one marine for theft. All went well, but when he began to flog one of the seamen for[?] an arm of the midshipman they, the ship's company, all went below & would not come up to see him flogged, which is against all law & the officers went amongst them & with difficulty brought them back. The man got two dozen & I really expect some bad consequences from it, as all the people went below grumbling; we have a very gentleman-like Lieutenant on board [Pyewell ?]: the people swear they will have him out of the ship & the people have sent a petition to the Adml. for their pay which he has sent to the Admiralty & I make no doubt we shall get it very shortly. They must give them their pay to satisfy our ship's company— & as liberty is given them to go on shore they have no money, therefore become desperate; on board the *Lion* they actually pointed the guns aft, but were brought to reason after a little.

My new Capn. has given very hard orders—he says we must all appear in uniform & the same cloaths & many other little inconveniences which I must put up with.

Five days after this letter was written, the *Cygnets* cutter arrived with the Nore delegates on board. In the words of a ballad writer, Neptune was urging the Yarmouth men to join forces:

'Awake, my sons', the watery monarch said,
'The torpid vapours from your souls remove;
Inspire yourselves with true fraternal love.
Unto the Nore repair without delay;
There join your brothers with a loud Huzza'.

However, all the delegates were arrested on their arrival and on the 26th Duncan decided to put to sea without further delay. The crews of the *Nassau* and three other ships refused to follow because, as the admiral told Nepean, 'they appear determined not to weigh anchor until they are paid the wages due to them'. Onslow was therefore ordered to transfer his flag to the *Adamant*, an incident referred to below. As late as 29 May the *Nassau's* men refused to sail with the *Montague* to the Nore, though they changed their minds on the following day.

These events are recorded in the log:

- May 26. Adm. Onslow shifted his flag to the *Adamant* in consequence of our crew refusing to go to sea.
- May 27. Sailed the Admiral [Duncan] and fleet, leaving the *Montague*, *Nassau*, *Comet*, *Stork* and the Russian ships [then on a visit] at anchor.
- May 28. Violent commotions took place in the ship and fleet. Saw the fleet at anchor at the back of the sands.
- May 29. Sailed the *Montague*. Arrived the *Standard*, *Lion*, *Belliqueux*. The ships of war hoist a Red Flag and double shot their guns.
- May 30. Running from Yarmouth to the Nore. Hauled down the Red Flag and under Blue Ensign fired a salute of 19 guns, being the Restoration of King Charles II. Rehoisted

the Red Flag. The ships have all a Red Flag at the fore. Ship's officers treated with respect.

May 31. Moored at the Nore.

June 1. Sundry shot are fired at vessels passing.

June 2. Several ships weigh and blockade the Thames.

Such events suggest that the *Nassau's* men were reluctant mutineers, and had it not been for Parker and the delegates of the *Sandwich*, the outbreak might never have amounted to much. Even on 5 June the log records firing another Royal Salute.

Letter II

Nore.

29th May 1797, H.M.S. *Nassau*.

My Dear Father,

I have but just time to tell that the people have broke out more than ever, have hoisted the Bloody Flag & loaded the guns fore & aft, resolved to engage any ship that comes along side. We have given up command of the ship to them. This day two of the fleet came in with the above flag hoisted.

I am sorry to say that all is Anarchy & confusion on board the *Nassau*. The people have the entire command of her & only pay that respect to their officers they usually did when duty was going on; when last I wrote I mention'd my doubts of the people going to sea without their pay, which is now really the case. Last Friday [26 May] our Admiral asked them whether they would go to sea with him & the fleet &, when they came in, pledg'd his honour they should be paid, but they said they would not before they were paid; the consequence is that Adml. Onslow hoisted his flag on board the *Adamant* & when he left this ship he was so affected & tears were seen coming down his cheeks & he even condescended to ask twice whether they would go, but [they] were resolute to their point.

We all (Officers) regret his leaving us, he was a good man, quiet when you behave soberly & obey his orders; he loved his officers & they did him. He is to have the *Russel* (74) &, if he can, will take the Lieuts & would have taken the Ship's company if they had gone to sea with him. On Saturday [27 May] the Fleet went to sea & left us & the *Montague* behind. All our persuasion to the men will not make them go to sea. They sailed in the evening & came to anchor at sea hoping we would go out to them, but all will not do. The fleet are still waiting, but our people now are desperate. They last night broke out & all mustered together & got a yard of rope rove to the fore-yard arm & were going to hang the boatswain and one seaman for speaking against them. Our Capn. went amongst them, reason'd & argue'd with them, but they would not forgive them. At last the Capn. hove his hanger overboard & said if they were going to hang an officer he should be the first or heave himself overboard. No, said they, neither shall be done. But at last they said once for all they would never forgive the boatswain. The Capn. left them distracted & I really imagin'd was going to make away with himself, but thank God he did not. The people considered awhile & their love for the Captain induced them not to Commit murder, but will have him (the boatswain) out of the ship.

All was quiet during the night, but in the morning they turned the hands up & the 'delegates' spoke to the Mutineers & said the *Montague* was going to Sheerness in spite of their officers & they would do the same; but our Capn. spoke once more & they appeared satisfied & our 'delegates' took a boat, went on board the *Montague* & spoke to the ship's company, told them that the *Nassau* should not go to Sheerness until some further day. The *Montagues* do not care, have actually unmoored & have a yard rope to hang the pilot if he should run them aground.

When our 'delegates' came on board, the officers called them aft & told them that despatches were sent up to the Admiralty by one of our Lieuts & asked if they would be quiet until he comes down. They called the hands up & after a consultation of some minutes all agreed to stay & then

gave the Capn. three cheers—they really love the Capn. & 1st Lieut [David Lloyd]; they are both good men.

If the Admiralty will not send down a favourable answer and pay them I shall not answer for the consequences, which I expect will be dreadful, but I trust in Providence all may be well. If the officers leave the ship, I will follow if I run, for I cannot call my life my own while I am in her. I imagine I am liked by the people in general, but do not like to trust to them if they take us by force to Sheerness; we shall be worse off there because all the ships there are in a plot together, even the *Garrison*. The *Inflexible*, the Commodore of the Mutineers, fires into every ship that arrives there if they do not sign their articles; our people only want money & will then go to sea. The yard rope is still hove & they will not take it down. Adieu my father. I hope I shall send you a better acct. of our people [in the] latter part of the week & all quiet. I would wish to know how Ireland stands affected: I am told in a bad state, but no Mutiny like one on board a ship. My love & duty to my dear Mother & Aunt, love to my dr. brother & write soon.

Letter III

Saturday 3rd June 1797,
Sheerness, H.M.S. *Nassau*.

My dear Brother,

I wrote to my father some days ago stating the Mutiny on board of us—and am sorry to say it has prevailed amongst the North Sea Fleet in general, I refer his letter to you & shall continue my narrative from that time.

When our mutiny flag was hoisted [29 May] all subordination was laid aside; only respect paid to us (officers); appointed a quarter-master, Captn. & fore-castle men Lieuts. I did the duty of the ship as strict & with as much discipline as if the real officers were carrying duty on. On Tuesday morning [31 May] they sent for the captain to come on board, but he would not while the flag was up. The mutineers immediately unmoored & weighed, took charge of the ship & at 8 in the same evening came too at the Nore where we found the Adml.'s ship [*Sandwich*] & 8 sail of Men of War, all with the Red Flag up. 4 sail of the Line came up with us. The people will suffer no officer to go ashore & the garrison will allow no provisions to come off to the fleet; in coming up we met a frigate who is going to take the Princess of Wales over to Holland & those fellows of mutineers would not let her pass for that purpose but fired into her; she fortunately got away from them with very little loss.

I have been very unhappy since this business has taken place & when they were bringing the ship up & hearing them cheer I could hold out no longer but went to my cot & shed tears there for the space of two hours, thinking to what a pitch our men got to in defiance of their King & Country, & since have passed my time in a state of stupid silence to everybody; the people turn'd one of the midshipmen on shore, but the remainder of us will sleep on board & all that I can do to provoke them to turn me on shore will not do, for I am told by them that I am too well liked & will be one of the last that they will turn out of the ship.

On Wednesday evening [1 June] I imagined that everything was coming to a crisis in our favour—but it was only a faint hope. The business was thus; our men came aft & one & all they were ashamed of their conduct, begged the officer's pardon & hoped they would get the King's pardon likewise, & were so sincere that most of them shed tears; I was for that time full of spirits in hopes of our ship's company's plan succeeding. The next morning they went round the ships that came with us who only wanted their pay & told them we would have nothing to do with the *Sandwich* & when we got our pay to go to sea; but all objected to it, saying they will stick to the *Sandwich* until their grievances are redressed. Our men came back very much dejected & are against their will obliged to stay here with the Red Flag up, so that all our hopes are blasted. The seamen want equal prize money, liberty for a certain time after being prest & entered, & to be tried by civil law, no court martial, or by 9 seamen & 4 marines on a seaman, & 9 marines & 4 seamen on a marine, & that no Capn. shall flog a man until this man is tried by this committee; our men still behave well to us & tried all their endeavours to get permission for our officers to go on shore, but

that damn'd infernal *Sandwich* will suffer no person on shore even the Capns, who are on board their respective ships, so that all are confined to the ship but generally stick to our own cabins, never on deck. On Friday the seamen's request went up to the Admiralty; we shall know the result in a few days. I am afraid if they give the seamen their request that *Sandwich* will be putting something else into the people's head.

A nephew of Adml. Parker, who was a Lieut. in this service but was broke, is at the head of all this; stiles himself Adml. Parker & carries on all the duty as if he really was one & respected as such by the 'delegates' of the fleet. Our mock Capn. & Lieuts & Delegates never leave the ship without side pipe & sidesmen at the ropes & all respect paid them as if they [were] real officers. We have a committee on board consisting of 12 men & nothing is done until they sit & consult together. The garrison has stopped all provisions from coming to the fleet, saying they will starve the people to their duty; but our fleet in return has blocked up the River Thames & Medway & will suffer no vessel to pass or repass, but resolve to stop the trade & commerce of the Country until their demands are complied with. There are at present 14 or 16 sail lying within gun shot of the fleet & cannot stir; this is a desperate undertaking & I expect dreadful results from it & we poor officers must suffer from these vagabonds. The North Sea Fleet are all of one mind except the two Adml. ships are at sea alone, the *Venerable*, Admiral Duncan, [the *Adamant*] Onslow, the other Admiral's name, as there is no communication with the shore only by the sick boat. I shall leave this open until an opportunity offers & if anything else occurs I shall continue on the other side.

Monday 5th June

I have just an opportunity of sending this away by a Brig that is allowed to pass. Everything is in its usual state. 'Stop Trade & hold out'; Government will not comply & will starve us out & no boat or person suffered to go on shore. £1000 reward for any delegate, £25 for a seaman or marine belonging to the fleet. I do not know when & where this will end, but I believe that some bad consequences will be possible. They say they will take the ships to Portsmouth in a short time—adieu my brother—God knows when I shall have an opportunity of writing again, or if ever I shall get out of this ship. My love & duty to my parents & to sisters & brothers & all my friends. I am afraid I shall not be able to get a letter from shore; am very anxious to know how you all are, but trust in Providence that you are all well. I am still in a melancholy mode & when I shall be seeing you again God knows,

Your afft & loving Brother,
A. Hardy

Sheerness.

They have hitherto opened all letters going from the fleet, but this will escape as otherwise I would not have sent it.

Adieu again God Almighty Bless you & all family.

On 6 June the *Grampus* and *Comet* escaped Parker's blockade, though they were fired at. 'Effigies are suspended at the yard arm of several ships', states the log, but it is clear that Parker's authority was now weakening because the next day 'several ships are released and permitted to proceed up river'. When, on 8 June, Parker toured the fleet with the suggestion that they should hand themselves over to the Dutch, those on board the *Nassau* replied 'No, we'll be damned if we leave Old England whatever happens to us'. On 10 June the *Leopard*, *Ardent* and *Repulse* 'slipped and ran up the Thames under the fire of several ships at the Nore. The *Nassau*'s boats are employed in the fleet on conciliatory measures. *June 11th.* *Nassau* fired a gun, struck Red Flag and shifted colours to Blue with

Union at the main, which is followed by the North Sea fleet, except the *Montague* and *Inflexible*, who are soon followed by a few more and still keep the Red Flag flying. At 2 sent an officer on shore with a Flag of Truce. The *Nassau*'s and *Lion*'s boats rescue a vessel with specie from the *Sandwich* and suffer her to pass. *June 12th*. The boats of the ship are employed endeavouring to accomplish a restoration of order throughout the North Sea Fleet.'

Letter IV

Friday 9th June 1797.
Sheerness H.M.S. *Nassau*.

My dear Brother,

We are still in the same state as when I last wrote. The Trade is stopped, no vessels going up or down the river but in distress, which seldom happens & having no communication with the shore. I cannot send or hear from you as usual—indeed they will not send the letters on board of any ship; at this place orders are sent down Thursday week to detain all letters for the North Sea Fleet until further orders from his Majesty; no supplies from shore of any nature whatever, what we get fresh is from the fishing boats who supply those who have money twice a week. The delegates & committee have them for nothing, which they generally give to the sick; our ship will not be in want of salt provisions these three months with good management. The seamen are stiled rebels & traytors to their King & Country & it's the country's intention to starve the fleet & have ordered some of the Grand fleet to join Adml. Duncan at sea, but I am afraid of them, as I understand that the delegates of 2 three deckers & 4 seventy fours have been here & say they will bring those ships to join in the common cause as they call it. They now muster 15 sail of the line & 9 frigates and God knows where it will end. His Majesty will not give pardon until the heads are given up to the law, but the seamen will not hear of anything of the kind.

Their cruelties to the officers are shocking in most ships. In one they tarr'd & feathered the surgeon & sent him on shore in that state, & in another they flogged the midshipman and a second master, shaved their heads and left one lock of hair in the crown of the head to be hauled up (as the Turks have it) by Mahomet, & then towed them round the fleet playing the Rogue's March as they went along & many other disgraceful punishment that I cannot relate without shuddering. They have hung Wm. Pitt in effigy in all the ships. Thank God we are still treated with respect & no harm done to any person owing to the committee. The ship's company would have tarred & feathered a midshipman, but the committee interferred & punished him only by turning him on shore.

Our people are very much dissatisfied one half against the other—one say to obey the officers & the other will hold out for their grievances, so that I may & do expect bloody work on board of us among themselves and blame themselves much for coming here. The day after we sailed from Yarmouth one or two of the Admiralty came there to pay them their wages & disaffection has increased so much amongst them that the delegates & committee have given out a proclamation that if any two persons are found standing & talking together on the present state of affairs shall be punished as the committee thinks proper. Adml. Parker, as the seamen call him & the same person I gave you a description of, has been on board & made a speech to the ship's company concerning a number of things & the articles which were sent to the Admiralty, but our ship's company who are well disposed would not agree to it, saying it was unjust to make a proposal of this kind & would sooner be tried by Capns. of Men of War than their our shipmates; the fellows came alongside in great pomp with a band playing God Save the King etc. but went out very ill pleased.

The Earl of Northesk, who commands the *Monmouth*, went up with 3 days leave to the Admiralty with the final petitions of the seamen and promised to deliver it into His Majesty's own hand & send down the Royal answer in the stated time. The time is now expired & the seamen

have made the signal to sail & where they intend to go, God only knows, some say to the Dutch, others say France & others Botany bay; let go where they will we (officers) will still be prisoners & would rather be prisoners amongst the French than with Englishmen, as we are now. Confined on board, I have no opportunity to send this on shore; I shall keep it open in hopes something favourable will turn up.

Saturday 10th June. 10. O'clock a.m.

Everything goes on well at present & I am in better spirits than I have been since the breaking out of this mutiny & I imagine that it has come to its height & will end in a short time. Last night we were in continual alarm, for 2 line of battle ships, the *Repulse* & *Leopard*, slipped their cables & lowered down the flag & ran thro the fleet with the intention of escaping, who kept firing at them. Our ship's company were going to slip also, but thro the interference of the officers etc. we stopt them, telling them the attempt would not answer, as there was not depth of water sufficient for such large ships. The people seemed satisfied & well we did not, for if they had perhaps I should not have been in the land of living at this time, as the *Repulse* got on shore at the entrance of Sheerness Harbour & was there fired into by the *Monmouth* & *Director*, 2 line of battle ships, besides a few frigates who fired now and then point blank shot. The *Repulse* stood the whole without returning a gun, but waited patiently until she was afloat again & after receiving their fire for almost 2 hours she got off and went into harbour; the loss on board her is not known, but is supposed to be 100 men. Our boat's crew that were close to her said they saw them heave their dead over board very fast & picked up a number who jumped overboard, & is otherwise damaged in her hull and rigging, but those brave fellows stood it all & got in safe. The *Leopard* went up the river to Gravesend & had only a few shot fired at her, having got out of reach of their guns in time. It was the most melancholy sight I ever saw—English men murdering Englishmen! The *Ardent*, another line of battle ship, ran into harbour at 2 this morning, after having poured her whole broadside in the ship that attempted to oppose her & got clear off; it is not known whether any accident has happened from her firing; our people are all in an uproar & afraid they will [be] left in the lurch—but I cleared their minds on that subject & went & spoke to the principal delegates, telling them that if they returned to their duty & got under weigh I & every officer on board would do our endeavours to get her in safe, & if fired on we would all go to Quarters (leaving men enough to trim the sails) & return their fire as fast as possible. They said they would stop until today & see more into it. I told them that if it was required I would (& I believe every officer would do the same) take my oath before the Admiralty that they paid in every respect due to officers in our situation, for which I thanked them; I spoke very freely, perhaps if I had said so much a few days ago I might repent it; the consequence is that this morning they would not hoist the Red Flag nor answer the signals. Our boat with a delegate has gone round the North Sea Fleet to bring them into our way of thinking that is to have pay & the King's Pardon & return to their duty. They have succeeded with 5 sail of the line already & are going aboard; the rest who will come in likewise, it is supposed. Capn. Knight of the *Montague* has just gone to them with a flag of Truce to give the good tidings of the North Sea Fleet having returned to their duty & he says he will take the fleet as far as the Hope near Gravesend if we will follow. I expect to unmoor every moment. There are 6 sail of us & if opposed by the rest will fall to work & sink them. Parker I hope will be hanged; he begins to be afraid of his neck already.

All letters to the fleet are detained & read by Lord Grenville, so do not write anything but about Ireland, as to its present unsettled state and how you all are getting on at home.

Letter V

Sunday. June 11. 1797.

The Red Flag is now generally hauled down, the people returned to their duty and all quiet at present. I hope in God it will continue so. About 1 o'clock Saturday, our boats having gone round the fleet, we made the signal to see how many were of the *Nassau* way of thinking & all answered, even the *Sandwich*; when we found all was so well, we fired a gun, hauled down the

Bloody Flag & hoisted a Blue Ensign Union Jack. All the fleet followed our example to the astonishment of the *Sandwich*, who after a little time hauled her's down. Some of the Line of Battle Ships still kept their's up. We sent to know the reason of it. They would not haul down until His Majesty's pardon was granted & they threatened to fire into us if we did not hoist ours up again, but our people (who have discovered their error) would not [?] that whoever dared to hoist it should be hung & were determined to stand to the last drop of blood to their guns if they should be fired into. I went round, as I did before, praising their conduct, telling them we had more ships to back us than they had & that we officers would stand by at our Quarters to assist them in so good a cause & all told me that the flag should never be hoisted up; that they were sorry for what they had done & hoped the King would pardon them, which I told them that I thought it certainly be granted to them; today they are so happy in the reflection that no person or officer was hurt during the time of their having the ship to themselves. We are quiet & the ships thought proper not to fire at any of us, so that peace is again restored.

Our 1st Lieutenant was sent on shore with a flag of truce to the Admiral & was well received; he saw Capn. O'Brien at Sheerness, who sent off a letter to the ship's company thanking them for their good conduct & said he would come aboard when the King would take off the embargo & was sorry he could not send them some refreshment, but it was more than his life was worth to relieve them until the late proclamation was annulled, which he said would be when the 1st Lieutenant came from London, where he was sent express to the Admiralty to inform them of our ship's company returning to their duty. I must say that our people deserve the highest applause for their conduct, as it certainly was the *Nassau* led away the North Sea Fleet by being the first ship who disobeyed their officers & the first that prevailed on the other ships to return to their duty & allegiance & we have the credit of bringing the North Sea Fleet to a sense of their error. One half of this fleet does not want to be paid & only came from sea to assist the *Nassau* & would follow her in everything she did or would do. I shall wait until I hear the result of the 1st Lieutenant's mission.

Tuesday, 13 June.

Everything has been quiet here since the crew held the ship in their hands until today, when they all came aft and deliver'd her to the officers & are now going up as high as Gravesend to wait for pardon & to leave the other ships to themselves. Yesterday our people, finding that while we lay with those ships that kept the flag of defiance up we would never be forgiven & all our good proceedings in bringing the fleet about would be of no use, yesterday therefore, in defiance of a 74, 64 & a few frigates, got under weigh & ran thro them, although they sent us a message that if we attempted to go from them they would fire into us. This made our people mad & answering they were doing wrong in staying where they were, all unanimously agreed to get her under weigh, but first be at Quarters. Loaded the guns with double shot & then proceeded to get up the anchors & when the last anchor was up fired a shot in mistake or, as some say, in defiance between these two line of battle ships, who immediately lowered all their ports & showed every evident marks of fear at our resolute behaviour; & when we got out of gun shot of them those rascals hoisted the red ensign, hauled down the Union Jack & sent on board a small frigate that would follow anywhere after us, that if she got under weigh they would fire into her; but that little frigate in spite or them unmoored between two frigates & at last made a signal for assistance having only 60 men on board—our people were so happy to see this that all volunteered to go & assist her.

The conduct & bravery of our men last night has given me & all the officers a convincing proof of our ship's attachment to their Country, & would live or die for so brave a lot of men & hope we shall have an opportunity of showing our country what men they are. If those ships fired one shot at us, we were determined to sink them. After all the firing, there were only 2 men harmed on board the *Repulse*, the 1st Lieutenant lost his arm & Somerville had the deck shot under him, but was not hurt & she received 18 shot in her hull.

A. Hardy.

The log records the end of the mutiny in these words: 'June 13. Unmoored and weighed, at the same time fired a shot over and among the ships wearing the Red Flag. The boats are all manned and sent on board the *Iris* and anchored her under the protection of the *Nassau*. At 8 a.m. weighed and shifted higher up the Thames. At 9 all Mutiny ceases and the ship's crew in a submissive and orderly manner surrender to their proper officers, who accept their resignation. June 14. Captain returned and joined ship, on which the ship's company discovered the strongest inclination of regard and affection.'

Hardy could well be proud of the part he played in bringing these unhappy events to an end. The behaviour of the men was such that, although 20 of them were court martialled, all save one was pardoned. In the muster book the words written against the names of these men—'Wages forfeited for mutiny and rebellion'—are crossed out and the word 'Pardoned' entered in red ink.

Sources

Holograph letters in possession of Mrs Stuart
Muster Book of H.M.S. *Nassau* in the P.R.O.
Log book of H.M.S. *Nassau* in the National Maritime Museum.
C. Gill, *The Naval Mutinies of 1797* (1913).
G. E. Manwaring and B. Dobrée, *The Floating Republic* (1935).
Earl of Camperdown, *Life of Admiral Duncan* (1898).

NOTES

WIRE RIGGING

(*M.M.*, Vol. 43, p. 249; Vol. 45, p. 260)

Perhaps the dates of patents for wire rope will clarify the matter of the dates on the *William Connal* lithograph. R. S. Newell had two patents for rope-making machinery (8594 in August 1840 and 9656 in March 1843), and it seems that these two alone could justify referring to the product as 'patent improved wire rope'.

Incidentally, someone knowledgeable in the history of wire rope could do the rest of us a great service by preparing a sketch of the development of this material. The shore applications in mine elevators, inclined railways, ploughing of fenlands, etc., probably were responsible for advances that the marine community accepted rather slowly.

JOHN LYMAN

AN UNFORTUNATE BIRTHDAY SALUTE

On 1 May 1834, the frigates *United States* and *Constellation* were lying in the harbour of Toulon and preparations were made for firing a 21-gun salute in honour of the birthday of Louis Philippe, King of France. Gunners-Mate Samuel City of the U.S.S. *United States* prepared 24 guns, 21 of which were to be fired in the noon salute. The salute went off smoothly until the firing of the 18th gun which sounded as though a shot had been fired from it. The gunner assured the lieutenant that all guns were unshot and the salute was allowed to continue. Upon the firing

of the 20th, however, the lieutenant was convinced that a shot had been fired and suspended the salute. It was soon evident that the last three guns fired had not been unshot. The 18th gun took effect on a shore battery knocking off part of the embrasure. The 19th sent a solid shot into the side of the French ship of the line *Suffren* causing considerable damage including the death of several sailors. The *Suffren* immediately beat to quarters and double-shotted her guns and was ready to fire a broadside into the *United States* when a boat was sent over to explain the accident.

EDGAR K. THOMPSON

CUTTER-BRIG

In past issues of the *Mariner's Mirror* there has been some discussion of 'cutter-brig', with many conflicting descriptions of the type.

I notice in Knowles's edition of *Naval Architecture* (Steel), 1822, 3rd ed., p. 12, the following: 'In the R.N., when cutter-built vessels are thus rigged (Brig or Brigantine) they are called Cutter Brigs.' This class of vessel is illustrated apparently in the Admiralty Collection of Draughts, from 1779 to 1797. Some of the vessels were laid down as very large cutters, then purchased on the stocks by the Royal Navy, after which they were rigged as brigs or brigantines. Examples are *Scourge*, 1779, *Swallow* and *Drake*, 1779, *Lively*, 1779, *Rambler*, 1796, and the captured cutters *De Braak*, 1797, and *Trimmer*, 1782. The Dutch-built *Orestes*, 1782, is so classed, though she seems to have come into the Royal Navy as a brigantine or schooner. (Steel gives particulars on this vessel.) There may have been a tendency to class brigs and brigantines as Cutter Brigs if they were lap-strake built, cutter fashion. This was the case in *Orestes* perhaps.

Though some cutters were re-rigged as schooners I have never come upon the type name 'cutter schooner' in a contemporary reference.

The identification of the schooners in Steel's *Naval Architecture* is a fascinating exercise in guess-work. Plate XXIII, 'A Virginia Built Boat fitted for a Privateer', may be *Felix* 80 ft.—4½ in. × 60 ft.—7½ in. × 22 ft.—7 in. × 8 ft.—5 in., 158 tons, bought into the Royal Navy about 1790. The 'Fast Sailing Schooner of 133 Tons', whose offsets and particulars are given by Steel, appears to represent an American-built pilot-boat model schooner, merchant-man, fitted for naval or privateer service, and built before 1790. The 'Fast Sailing Bermuda Schooner' is the *Ant*, in the Royal Navy when her lines were taken off in 1803. I believe she was bought some five or six years earlier. The schooner plates were engraved from Admiralty Draughts, I believe, with both changes and errors incorporated! At any rate, the draught of the *Ant* still exists in the Admiralty Collection of Draughts for comparison.

HOWARD I. CHAPPELLE

GUN SALUTES

In my note on 'Gun Salutes' (*M.M.*, Vol. 45, November 1959, p. 326) I referred to the anniversary of the Gunpowder Plot having been added to the list of saluting occasions at some date between 1688 and 1716. While this note was in the press I chanced to come across evidence that this anniversary was in fact added in 1688 or 1689. Among the Portsmouth Dockyard papers preserved in the National Maritime Museum (POR/B. 1) are orders for the following salutes to be fired by ships there in 1689 on the occasions of 'thanksgiving for our delivery from popery & arbitrary government', the King's Birthday and Gunpowder Treason:

	14 February	4 November	5 November
ROYAL CHARLES	21	31	21
ROYAL JAMES	19	29	19
ROYAL GEORGE	—	27	17
Each 2nd Rate	11	11	11
Each 3rd Rate	9	9	9
Each 4th Rate	7	—	—

W. E. MAY

WILLIAM RAVEN, R.N. AND HIS *BRITANNIA*, 1792-95

When William Raven, R.N., sailed from Greenwich on 16 February 1792, as captain of the 296-ton *Britannia* his ship carried 203,520 pounds of pork, 101,664 of beef and 48,809 of flour to feed what Alexander Dalrymple—who was to become in 1795 the first hydrographer to the Admiralty—had called ‘the thief colony at Botany Bay’. From the returns of Captain Arthur Phillip, R.N., the Governor, the Colonial Office had calculated that the colony’s rations of beef and pork would be exhausted on 29 July 1792, and that in all probability *Britannia* would arrive about that time. She arrived on 26 July. A little later one of the convicts stole Raven’s watch and chain.

Captain Raven was part owner of *Britannia*. The chief owner was Captain John St Barbe of London, who had been a friend of Tobias Smollett (1721-71), ex-surgeon in the Royal Navy and author of *Roderick Random* and other works. St Barbe had secured for *Britannia* a licence from the East India Company, which held a monopoly of trading and fishing rights from the Cape of Good Hope almost to Cape Horn. After discharging his cargo at Sydney, N.S.W., Captain Raven proposed to try sealing and whaling on the New Zealand coast. *Britannia* did land a sealing gang in New Zealand and took just one whale during the next few years. But her real business from 1792 to 1796 was feeding and fostering the colony of New South Wales, bringing cargoes from the Cape of Good Hope, Brazil, Batavia and India. Raven was a pioneer in the penetration of New Zealand, fought Malay pirates in Malacca Straits and played many parts afloat and ashore.

Robert Murray sailed as *Britannia*’s third officer. He kept a very full journal, headed: ‘Journal of a Voyage from England to Port Jackson in the Years 1792, 1793, 1794 & 1795, in the ship *Britannia*, Wm Raven Commander.’ Murray left *Britannia* at Sydney in June 1795, but carried on the *Journal* until 17 April 1796. Then he ran out of paper.

Murray’s *Journal* is now in Salem, Massachusetts. Many years ago it was transferred from the Essex Institute to the Peabody Museum, of which it is one of the chief treasures. How it came to the Essex Institute is not known. Murray may have shipped later on a Salem vessel.

Murray’s entry for 23 February 1792, a week after *Britannia*’s sailing from Greenwich, showed the perils that a sailor faced on shore in those days. It runs: ‘Departed this life Geoffrey Robinson, cook. This poor fellow had been robbed on the road between London & Gravesend & the villains beat him in a terrible manner. Since that period he had complained & this day died.’ The entry for Friday, 24 February, reads: ‘Committed the body to the deep; the effects he died possessed of were buried with him.’ This was surely most unusual.

Captain Raven went ashore at Teneriffe on 2 March and bought five quarter casks of wine, 150 pompions [pumpkins], a hundredweight of figs and a bag of chilies. At Bona Vista in the Cape Verde Islands a week was spent in loading salt. On 28 April *Britannia* spoke the whaler *Brothers of Dunkirk*, D. Swain, master. Swain was one of those Nantucket whalers who had gone to Dunkirk after the end of the American Revolution when other Nantucketers went to Milford Haven in Wales. On 2 June a sperm whale struck *Britannia* ‘an exceedingly heavy blow’ but did her no great damage.

On 26 July 1792, *Britannia* moored in Port Jackson. On 8 September she hauled out of the Cove in order to sail on the proposed whaling and sealing voyage, but on the 10th she was wind-bound at Bradley’s Head, where she anchored. At this time ten of the military and civil officers chartered her to go to Capetown via Brazil, for supplies and stock. Major Francis Grose, commander of the N.S.W. Corps, told Governor Phillip that the officers had taken this step because the soldiers had scarcely shoes to their feet and ‘no other comforts than the reduced and unwholesome rations served out from the stores’. He described Raven as part owner, as well as master, of the vessel.

All hands on *Britannia* were now put to work cutting and securing grass hay for the 40 cattle that were to be bought at Capetown. On 23 October *Britannia* cleared Port Jackson Heads. On 25th a school of sperm whales was sighted and one was killed. It yielded ten barrels of oil.

The great snow mountains of New Zealand were sighted on 3 November and on Tuesday,

the 6th, *Britannia* moored in Facile Harbour, Dusky Bay. At Dusky, Raven's men noted, in addition to trees cut down by Captain Cook's crews in 1773, the stumps of several trees that had been recently felled. These had been cut by Vancouver's men in November 1791, when he touched at Dusky on his way to chart the north-west coast of America.

At Dusky Raven landed a carpenter and nine other men, with William Leith, the second mate, in command, to collect sealskins for the China market. A house, 40 feet long and 15 feet wide, was built for them. They were left with shipbuilders' tools so that they could build a schooner in case of accidents. The carpenter was Thomas Moore, later a leading citizen of New South Wales. A Theological College now bears his name.

Britannia sailed again on 2 December 1792, leaving the 11 men at Dusky, the first Europeans to spend any considerable time ashore in New Zealand. There were very few Maoris living in this part of the South Island and they kept out of the way.

On 16 January, 1793, *Britannia* spoke near the Falkland Islands the ship *Favourite* of Nantucket, Barnard master, bound for the Pacific by way of Cape Horn. The Enderby whaler *Emilia* had pioneered whaling in the South Pacific four years earlier and the Nantucket men were there almost as soon. The first American whalers known to have reached Australia came by way of the Cape of Good Hope and were at Sharks' Bay, Western Australia, in May 1792. These were *Asia* and *Alliance* of Nantucket.

Britannia anchored at the island of Santa Caterina, off the Brazil coast, on 1 February 1793. Raven found a good interpreter in Antonio Mora, a native of Rio de Janeiro, who had had long service in the Royal Navy and now had a small farm on the island. Two men, John Haven and Joseph Turner, deserted at Santa Caterina and took to the woods but were brought back. Haven had been made second mate when Leith was left at Dusky Bay. From Santa Caterina *Britannia* took a cow and a calf as well as tobacco and other supplies. On 25 March 1793 she anchored off Cape Town. Captain Raven completed his cargo and sailed on 24 April, reaching Port Jackson again on 25 June.

There the schooner *Francis*, which had been brought from England in frame, was ready to launch. 'The whole strength of the colony being insufficient the Commander of the *Britannia* was ordered to compass this mighty point.' *Britannia* warped over to the Hospital Wharf, made the schooner fast over a 'luftackle purchase' and hove her off at high water. The grateful Major Grose, now Acting-Governor, gave the ship's company a hog weighing 232 pounds. Raven was then asked to fit the schooner for sea. He did this and was then 'ordered to take her under his care to New Zealand & to send by her an account of the productions of the country'. *Britannia* was to go from New Zealand to Calcutta for a cargo of salt provisions. He was allowed 14s. 6d. a month for 300 tons until he came to Port Jackson again.

The two vessels sailed from Sydney on 8 September 1793. On the 27th they were off Point Five Fingers, Dusky Bay. Leith and his men had collected 4500 sealskins, a result with which Captain Raven was only moderately pleased. They had also nearly completed a small vessel. This was left at Dusky Bay. It proved useful later.

Leaving *Francis* to return to Port Jackson *Britannia* stood away for Norfolk Island where Raven found provisions 'tolerably cheap'. Lieutenant-Governor King commandeered *Britannia* to return to New Zealand two Maoris, whom Murray calls Tooky and Hoodoo. Lieutenant Hanson of Vancouver's storeship *Daedalus* had taken them to Sydney whence they had been sent to Norfolk Island that they might teach the convict women how to spin the New Zealand flax (phormium), an art in which they proved lamentably lacking. When they reached New Zealand *Britannia*'s men bought mats, patoo-patoos, paddles, bracelets and other curios, as well as a 40-foot canoe.

Having landed the two Maoris *Britannia* was back at Norfolk Island on 18 November. King, with a lordly disregard of the mounting costs of the charter which greatly irked Grose when he learned of it, then retained *Britannia* till his despatches for England were ready. He sent them on board on 22 November.

On Christmas Day, 25 December 1793, they sighted a group of islands near the Carolines. Taking them for a new discovery (which is doubtful) Raven called them the Raven Islands, by which they were long known to seamen. They are the Ngatik Islands.

Britannia came to Zamboanga in the Southern Philippines on 19 January 1794. Supplies were plentiful but the Spanish Governor enforced a monopoly and charged five shillings for two pounds of rice. Of the inhabitants Murray says: 'We found a mixture of Moors, Malays, Spaniards & Mestizoes, with pot bellies, who stank like the devil from the filthy custom of anointing their heads & bodies with Cocoa Nut Oil.'

On 2 February *Britannia* came into the Straits of Malacca. A vessel anchored close to St John Island hoisted blue colours with a white ball and a crooked knife or dagger next the staff. 'We hauled upon a wind to speak to her, being anxious for news, & Mr Leith, the second mate, was ordered on board of her.' As Leith (the leader of the New Zealand sealing gang) was about to put off the stranger was seen to be making sail towards *Britannia*. With the glass Murray saw that she had nearly 20 oars out on one side. At 9.30 a.m. the vessel was within hail; Captain Raven had the trumpet in hand to call to her when she fired a gun loaded with round and grape shot at *Britannia*'s mainmast. The shot was returned but the stranger came on using all sail and her oars; her boarding stage was on end. Both sides blazed away; the pirates made ready several times to board, now on the bow now on the quarter, but faltered when it came to the point.

At 11 a.m. nine other proas with the same flag stood out from the Sumatra shore, some towing two canoes and some one. Two more proas put out on the other side, making twelve in all. At noon it fell almost calm. The first pirate came close on the starboard bow, beating his gongs and firing his guns. At that moment the ship fell round off and *Britannia* fired her starboard guns, every one of which hulled the pirate. In great confusion the pirates gave up the contest and stood towards the other proas which were then about two miles from *Britannia*.

Britannia, as the breeze rose, stood towards the enemy, firing away till she came near the Sumatra shore and had to tack. At 2 p.m. the pirates' craft were two gunshots away. Captain Raven gave up the attempt to pass Malacca Straits. *Britannia* had but a few rounds of gunpowder left and only 30 men, against 12 proas each carrying more than 100 men and armed with a 9- or 12-pounder gun each beside swivels. With a fine breeze from the westward *Britannia* stood away for the eastern entrance of the Straits. At 3 p.m. the pirates gave up the chase.

Captain Raven then decided to try Batavia, which he reached on 11 February. He there heard that Britain and France were at war and that the Bay of Bengal was swarming with French privateers. Raven applied to the Dutch authorities for salt provisions. The price quoted was 12 stivers the Dutch pound. Raven pointed out that this was very high. The High Council of the Dutch Indies, acting through the Shabamder H.Y.S. Vincent, agreed to sell the salt meat at nine stivers a pound 'in consideration of the wants whereunder the colony of Botany Bay labours'. So *Britannia* came to Port Jackson again on 1 June 1795, with a cargo of meat, rice, sugar and arrack.

At Batavia W. Gloucester, caulker of *Britannia* and Jason Parker, seaman, died. 'These events were followed by the death of Mary, the daughter of W. Gloucester. The innocent prattle of this child had endeared her to us all; its mother with great impropriety had taken the child on shore where, from a want of care in the authors of its existence it caught the fever which killed it. The woman, with an inhumanity which I now shudder at, had in their sickness not the least attention to husband or child. The former would, had not the sailors in humanity assisted him, have wanted the common necessities of life. The infant expired in the arms of its intoxicated mother. The remaining child (for she had two) was taken by a Gentleman whose name I regret having forgot. He had attended the Man from motives of humanity in his illness & had remarked the want of maternal affection in the mother. To save the remaining child he took her himself, ridding the unhappy woman of what she thought an encumbrance.'

These shocking scenes had such an effect on the seamen that they could hardly be persuaded to go on shore. Not one, apart from the two who had died, had any sickness in Batavia. But after a call at Bantam for water, fever raged to such an extent that at one time only eight, including officers, were fit for duty. However only one died. Murray was carried on shore at Sydney but when *Britannia* sailed for Capetown, on 1 September 1794, he was able to crawl about his duty.

Britannia reached Cape Town via Cape Horn on 16 November after sailing 10,264 miles in 10 weeks and two days. Murray 'conceived this to be very good going for a merchant ship'. Murray remarked that envy could not find cause to blame the Dutch of the Cape but was shocked

by the way in which many ladies called their servants bitches or sows. *Britannia* was in Port Jackson again on 3 March 1795. In 125 days at sea since she left that port she had sailed, by the log, 16,977·7 miles, an average of 136 miles 6 furlongs a day or 5·34 miles an hour.

While she lay in port discharging her cargo, which included 33 horses, the big East Indianman *Endeavour*, W. W. Bampton master, arrived from Bombay with cattle which supplied Australia's first team of oxen. On 3 June Captain Raven suggested that Murray should join *Endeavour* as fourth officer. Murray replied that he did not wish to leave *Britannia* until she returned to England. Raven advised him to make the change, saying: 'India is, I think, the best place in the world in which, under such a commander as Mr Bampton, you must meet preferment.'

So on 4 June Murray left *Britannia*. On 6 June Captain Bampton sent him with 20 Lascars to the Hawkesbury River to cut timber for *Endeavour*. The expedition was not a success and Murray seems to regret having left *Britannia*. On 18 August 1795, *Endeavour* left Port Jackson for India via New Zealand in company with the brig *Fancy*, E. F. Dell master. Few deep-sea ships left Port Jackson in those days without one or more convicts on board, but *Endeavour* held the record for stowaways. On 19 August Murray noted in his *Journal*: 'We this morning discovered that malgre all our vigilance upwards of 40 men & one woman had found means to secrete themselves on board & had escaped the search.' The actual number was 45 men and one woman. There was obviously some hanky-panky about it. Later entries by Murray read as follows: 'I did yesterday sign a paper which I will not swear to on future occasions; it was concerning the prisoners above-mentioned.' And: 'If the convicts mentioned are Carpenters this may look as if we had concealed them but I am certain it was not the case.'

On the voyage to New Zealand *Endeavour* made very heavy weather of it and leaked badly. She was run aground at Dusky Bay and never sailed again. With the crews of *Endeavour* (a 800 ton vessel) and *Fancy* and the stowaways there were 244 persons at Dusky Bay. It was a larger population than Dusky ever had, before or since. There was only the little brig *Fancy* to carry them. But a shipwright named Hatherleigh and the convict carpenters completed the craft that Raven's men had left on the stocks in 1793. She was rigged as a schooner and named *Providence*. Hatherleigh also went to work to build from and upon the longboat of the *Endeavour* a vessel named *Resource*. This was not completed when, on 7 January 1796, *Fancy* and *Providence* set sail. Captain Bampton went on *Fancy*, with 64 persons on board. The little *Providence*, with Murray in command, had 90 souls on board and was exceedingly crowded.

That left 90 persons at Dusky. With 55 of them on board *Resource*, commanded by Waime, first mate of *Endeavour*, reached Port Jackson on 17 March 1796. Of the 35 left at Dusky to live on what fish and seals they could catch the contemporary historian of N.S.W. wrote: 'They had all belonged to this Colony & one or two happened to be persons of good character.'

The transformed longboat *Resource* is described as a vessel of 60 tons which was much admired by experts in Sydney. Those on board had eaten their last morsel of food some time before they sighted Port Jackson Heads. No reason was given why she could not have returned to Dusky Bay to pick up the 35 Crusoes. The *Resource* was sold for £250 and was still in N.S.W. when Captain John Hunter, R.N., sailed for England in 1800 at the end of his term as Governor.

However, help was on the way from an unexpected source. On 11 January 1797, the brig *Mercury* of Providence, Rhode Island, came into Port Jackson on her way to Manila. She was in need of repairs and spent nearly four months being refitted. The master offered to go to the rescue. As Hunter put it in a despatch to the Duke of Portland, Secretary for the Colonies, dated 10 January 1798:

'As I had long been apprehensive that some of these people might still be in that melancholy situation, upon the master of this American having offered to go thither & take off such people as he might find & land them upon Norfolk Island, on condition that I would permit his taking from the wreck what stores he might want, I refused my sanction to his taking anything from the wreck but said that he might make what terms he could with the people he might find belonging to her, & that I would give him a letter to the commanding officer upon Norfolk Island to permit his landing these people there. This service he has performed under many difficulties & has sent me a copy of his agreement with those unfortunate people whose deplorable situation for so long a time had given me much concern.'

The unfortunate people had in fact been marooned at Dusky for 20 months before *Mercury* came to their rescue. Hunter went on to tell the Duke that when a band of 14 convicts had carried away on 5 September 'our largest & best boat' he had had to send out two armed rowboats in pursuit as he had 'no fit vessel to pursue on such occasions'.

Fancy and *Providence* sailed in company to Norfolk Island. On 31 January 1797, the two vessels left Norfolk for India. *Providence* sailed badly. Murray's entry for 9 April reads: '*Fancy* took us in tow on account of our bad sailing.' On 11 April they saw land and for 14 April Murray noted that the 'extremes of Celebes' were in sight. The land was still in sight on 15, 16 and 17 April. The *Journal* ends at the bottom of a page with the words, under the date 17 April: 'Two patches off S.E. by E. 9 Lgs (leagues). 118-33 E.'

So Robert Murray passes from our knowledge. That he brought *Providence* into Batavia is indicated by a statement made by Hunter in 1802 about 'two New Zealand-built schooners of 50 tons'. He says that one was at Port Jackson (*Resource*); the other (*Providence*) 'was, I believe, taken to Batavia'. *Resource*, by the way, had been re-named *Assistance*.

Captain Raven and *Britannia* continued in the service of the still-hungry colony after Murray had moved to *Endeavour*. Lieutenant-Governor William Paterson, who had succeeded Grose, chartered the ship to bring provisions from India. On 11 January 1796, Sir John Shore and other officials at Calcutta gave Raven a letter to Governor Hunter (who had replaced Paterson) suggesting that convicts whose term of servitude had expired might be recruited for service in India. 'The encouragement we have had to believe, from our enquiries of Captain Raven & others, that a number of stout young men may be obtained amongst them, induces us to wish to make the experiment, provided it meets with your sanction & support, which we are inclined to hope it will, as the plan comprises two objects of great national importance: First in the additional security it may afford to the British possession in India by keeping up our European force; & secondly by holding out a future profession & pursuit to a class of men in which they may become useful to their country instead of returning to those habits & practices which first occasioned their expulsion from it.'

The officials added that they had conditionally agreed with Captain Raven to bring 200 convict recruits, if they could be had, to India at £12 each. They had also accepted Raven's offer to take to Sydney a recruiting officer, Lieutenant Campbell, and a surgeon, Mr Phillips. The surgeon was to examine the recruits. If the plan succeeded they hoped that Hunter would send, as occasion offered, as many recruits as could be procured. 'We will make the same allowance to the owners for their passage & subsistence as to Captain Raven & will engage to pay the bounty money on the arrival of the recruits in Bengal.'

Britannia went to Madras for more supplies and finally reached Sydney on 11 June 1796. Hunter did not welcome the proposal. He referred it to the Duke of Portland in London, which meant that it would be at least a year before an answer could be expected. He suggested that ex-convicts of an idle and unsettled disposition might be allowed to enlist for service in the East Indies, as they would probably make better soldiers than farmers. The Duke rejected the whole idea. So Captain Raven's idea of ex-convicts to uphold and extend the British empire in India came to nothing. It mattered little in the long run.

Five years later a party of convicts reached India without help from Captain Raven. The *Annual Register* for 1801 notes that in March 'some convicts having escaped from Botany Bay & after extraordinary perils & hardships reached Hindostan & endeavoured to proceed up the Godavery with intent to proceed to Hyderabad; but were intercepted by a party of Sepoys & conducted to Madras where, having confessed to the circumstances of their escape they were ordered to be sent back to the colony at the first opportunity.'

No more is heard of them, but in 1810 Captain Eber Bunker brought from India to Australia two convicts who had helped to fight a British warship. They were amongst the 50 convicts who, led by Robert Stewart, once a lieutenant in the Royal Navy, had seized the brig *Harrington* on 15 May 1808, and carried her out of Port Jackson. In March, 1809, the *Harrington* fell in with H.M.S. *Dedaigneuse* off the coast of Luzon in the Philippines and put up a fight. When the convicts were worsted they ran *Harrington* ashore and set fire to her. Stewart and others were captured and sent to India.

Raven seems for a time to have thought of settling in N.S.W. and to have cherished the old sailor's dream of selling his ship and of becoming a farmer. On 11 June 1795, he received from Paterson a grant of 100 acres in the Eastern Farms district, close to Sydney. A return of grants, up to 1 January 1800, shows Raven, now described as: 'Commander of H.M.S. *Buffalo* to N.S.W.' as holding 285 acres at the Eastern Farms and a lease of town land in Sydney, obviously a home or business site. But William Raven did not put down roots in New South Wales.

Having discharged his Indian cargo at Port Jackson Captain Raven intended to take *Britannia* to India to secure a cargo for England. Governor Hunter stepped in and chartered *Britannia* to carry officers and invalids to England. The charter party, dated 1 August 1796, fixed the rate at fifteen shillings a ton per calendar month. Wind and weather allowing, *Britannia* was to sail on or about 1 September and to touch at Norfolk Island. Raven was to have a crew of six men and a boy to every 100 tons. The penalty for any breach of the contract was £1000. Hunter shipped a cage of birds intended for John King, under-secretary for the colonies, and another for Sir Charles Middleton of the Navy Board.

What became of the birds is not stated, but a note from the Transport Office to King, dated 26 July 1797, stated that *Britannia* had just arrived in London River from Botany Bay. It included the following list of persons victualled by the Government on board *Britannia*: 15 invalids of the N.S.W. Corps; four wives and nine children of soldiers; two invalids from H.M.S. *Reliance*; Mr Leeds, late assistant surgeon; Samuel Pritchard from N.S.W.; Henry Phillis, servant to John Palmer the Commissary; Mary Love, from N.S.W.; three French prisoners and Ensign Wheatly from the Cape. Hunter described Leeds as 'the most incorrigible drunkard I ever beheld, & must be sent home for he is of no sort of use'.

Passengers who had already left the ship when the list was made out were Captain P. G. King, Lieutenant-Governor of Norfolk Island, David Collins the Judge-Advocate and John Palmer.

Captain Raven left *Britannia* after her return to England. In 1798 he sailed again for Port Jackson as commander of H.M.S. *Buffalo*, an armed ship sent out for the service of the colony. On 6 February 1798, the Duke of Portland advised Hunter that *Britannia* (not the one that Raven had commanded) which carried the letter would be 'almost immediately' followed by *Buffalo*. She did not, however, reach Port Jackson till 3 May 1799. When she did arrive Governor Hunter appointed himself captain of *Buffalo* and made his nephew, Lieutenant William Kent, R.N., the acting captain. This left Raven out of a position. It was, however, several months before Raven could leave N.S.W.; when he did it was on another *Britannia*. This was a 301-ton whaler built at Bridport in Dorset in 1784. She was owned by the Enderbys of London and commanded by Robert Turnbull, a well-known whaling captain of the day. This *Britannia* came into Port Jackson on 4 November 1799, with 160 tons of sperm whale oil on board.

Britannias were so common at the time that it is hard not to confuse them. At least four *Britannias* were in and out of Sydney in the seventeen-nineties. There were: (1) The whaler *Britannia*, commanded by Thomas Melville and owned by Enderbys, which arrived with convicts in 1791 and was one of the first vessels to go whaling on the Australian coast; (2) Raven's *Britannia*, owned by John St Barbe; (3) the transport *Britannia*, commanded by Thomas Dennott, which arrived on 27 May with recruits for the N.S.W. Corps, and convicts from Ireland; (4) the Enderby whaler commanded by Turnbull. This may, of course, be identical with no. 1.

There may have been a fifth *Britannia*. But probably Turnbull's vessel is the *Britannia* which reached Sydney on 18 July 1798, with 96 women convicts. Having cleared the ship of her 'live lumber' (as Thomas Melville, master of the first *Britannia* put it) she had presumably gone whaling and returned in November 1799 with her 160 tons.

When Raven left Sydney for the last time at the end of 1799 Governor Hunter entrusted to him three important despatches. In the first, dated 10 November 1799, Hunter gave the arrangements for the first shipping register ever kept in Australia. In the second, dated on the same day, Hunter noted that copper coins to the value of £550 were being shipped from London to N.S.W. and suggested a silver coinage for Australia. The third, dated 15 November, is a long letter in which Hunter defended himself and his administration from attacks made by an anonymous writer whom Hunter described as a dark and infamous assassin 'capable of vilifying the immaculate character of his God'. This person has never been positively identified. The indications are that

Hunter considered that it was the 'Scottish Martyr', the Rev. Thomas Fyshe Palmer, who was to die at Guam four years later.

The letters were never delivered; their contents are known from copies kept at Sydney. *Britannia* found the English Channel beset by French privateers. Raven, taking the despatches with him, tried to land on the Isle of Wight by boat. The privateers captured him and seized the letters before he could sink or destroy them.

Another Scottish Martyr, Thomas Muir, transported like Palmer on charges of sedition, had reached France in 1798 by way of Nootka Sound, California, Mexico, Cuba and Spain after escaping from Sydney in the Boston vessel *Otter*. But it cannot be supposed that either the French Government or the privateers had any interest in the letters that Raven carried. However, this is the last known incident in the story of William Raven. He had done notable service to Australia over a period of seven years. Murray's evidence indicated that he was a man of fine character as well as a first-class seaman.

THOMAS DUNBABIN

WRECKS IN THE ISLES OF SCILLY

Juliet du Boulay is incorrect when she states (*M.M.*, May 1960, p. 101) that when Sir Cloudesley Shovell's ships were wrecked the *Phoenix* fireship foundered near where the *Association* struck.

The *Phoenix* was not in company at the time, having been detached that morning with the *Lenox* and *Valeur* to go to Falmouth. Thinking that they were already in the mouth of the Channel they steered a more northerly course than the fleet until the afternoon when, the weather getting thicker, they altered course to starboard, finally steering E.S.E. It was not until about seven hours after the main catastrophe that they found themselves in danger. While the other two vessels managed to wear clear the *Phoenix* bumped over the rocks of Samson Island to safety.

The *Lenox* thought that the *Phoenix* had been lost and there seems to have been an idea that she was so badly damaged she was better disposed of, but she came home, was rebuilt in 1709 and again in 1727 and survived until 1744 when she was sold for £201.

W. E. MAY

ANCIENT EGYPTIAN HULL FORMS

In commenting on my experimental research on Egyptian sails, Mr King-Webster opens by saying that he has only a 'slender knowledge' of ancient Egyptian craft.⁽¹⁾ However, this does not prevent him from making certain assumptions as to the shape of Egyptian hulls, which if true would invalidate the conclusions I drew from my experiments. He says that ancient Egyptian hulls tended to be barrel-shaped in section, and he likens Sahure's ships to the shape of a banana, presumably in section as well as in profile. The main assumption I made in the experiments was that Sahure's ships shown in my fig. 2 were flat-bottomed. My conclusions obviously do not hold if these boats were round in section. But it can be easily shown that these boats were most probably flat-bottomed.

In the first place, a number of pottery models of boats have been found in graves belonging to the Predynastic period in Egypt. All that can be dated with accuracy come from the Gerzean period, the last of the prehistoric periods before the opening of the First Dynasty around 3100 B.C. The majority of these have flat bottoms, and some have the marked sheer seen in Sahure's ships.⁽²⁾ Only a few show round bottoms, some of these with rather sharp sections. The variety of the general shapes of the models indicates that the flat bottom was the common hull form. It is interesting to note that as a group these Predynastic Egyptian models provide the earliest evidence we have of hull shapes. Mr King-Webster speaks of 'developing' these hull forms. Actually we probably have a case of evolution rather than development, and the variety of boat forms known in Chalcolithic Egypt indicates that their antecedents undoubtedly go back to Neolithic times or earlier in Africa. Many of these probably stem from dugout forms. There are not many boat models from the Old Kingdom, and these are made of wood. Some of these are round in section, while others still have the flat bottom of older times. It is significant that Boreux associated the flat-

bottomed Old Kingdom models with the larger river sailing craft, the round-bottomed boats with smaller types of boats.⁽³⁾

In addition, there is the internal evidence provided by the details shown on different boats in the great representations of the Sahure reliefs. Our fig. 2 represented just one of these boats. No two show exactly the same details of hull construction, yet no details are contradictory. When these are analysed carefully, it is apparent that these hulls were flat-bottomed. Several reconstructions of Sahure's ships showing round bottoms are thus almost certainly incorrect in this respect.⁽⁴⁾ A further indication that these vessels must have had flat bottoms is indicated by the fact that the boats appear to ride on the very surface of the water. Some scholars have suggested that the Egyptian artists exaggerated this detail for some unknown reason. However, a flat-bottomed boat of the general lines of Sahure's rides high in the water in exactly the same manner as Sahure's. This is excellently illustrated by the Portuguese *saveiro* and *meia lua*.⁽⁵⁾ These bizarre craft certainly could be pages from the Egyptian record, and actually must represent the survival of this type of craft from Egyptian times, although the Egyptians certainly did not introduce them directly to Portugal. Therefore, if Mr King-Webster would have round sections on Sahure's ships, the burden of proof rests squarely in his lap. Actually I believe that better results would have been obtained with a 'punt'-shaped hull such as found on the lakes of Switzerland.⁽⁶⁾

Mr King-Webster finds that my experimental results surprise him so much that he is forced to reject them as due to some experimental error. His comments regarding my results show: (1) that he has failed to realize the full nature of the experiment which I carried out, and (2) that he is unfamiliar with scientific experiments. In general the experiment was carried out on a flat-bottomed boat with a square sail placed on a mast *well forward* of the centre of lateral resistance of the hull. He says that he has read technical books on yachting, and that these indicate that leeway forces start as soon as a vessel departs from a dead downwind course. He notes that my figure 4 does not show any leeway until the boat was moved 30° away from the path of the wind. He says that this is 'so surprising' that there must be an experimental error in my work, which should therefore be categorically rejected. He suggests that the trim of the sail may be one of the experimental errors. The trim of the sail indeed explains the discrepancy, but it is not an error. Mr King-Webster apparently did not appreciate my opening comments under RESULTS.⁽⁷⁾ I pointed out that if the sail were set *square to the wind* when the boat was headed 30° away from the path of the wind that the boat slipped to leeward a full 15°, but once the sail was trimmed into the wind, no leeway was lost. There is a possible comparison for the manner in which I set this square sail when before the wind, from an Old Seaman's rule which says that the driving power of the wind is strongest when the yard of a square sail stands so that it halves the angle between the wind direction and the keel.⁽⁸⁾ Actually I set the sail much closer to the wind than this rule. In general I trimmed the sail into the wind as much as possible (i.e. just short of luffing) when sailing 30° or more away from the path of the wind. Below 30° it was not necessary to trim the sail to this extreme to stop the leeway. If it is assumed that with my maximum sail setting the angle between the wind and the yard was about 45°, it is possible to compare my sail settings with the Old Seaman's in Table 1. The Old Seaman's rule obviously does not apply when the wind is forward of the beam, since it requires that the sail be set closer to the wind than possible.

The technical yachting data Mr King-Webster refers to are very probably based on well balanced fore-and-aft rigs (and it may well be somewhat similar in sail settings to the Old Seaman's rule). To duplicate my sail setting in a single-masted fore-and-aft headed only 30° away from the wind would mean easing the boom (or the sail foot) out 15° *forward* of the athwartships position. I know of no fore-and-aft sailor who would consider doing this in a fore-and-aft craft. Generally the tendency is to trim the sail slightly after moving away from dead downwind. Further, most fore-and-aft craft have side stays or shrouds which physically prevent the boom from being let out more than to an athwartships position. I have noted above that when I headed 30° away from the wind with the sail set square to the wind the boat slipped to leeward 15°. Such a sail position is equivalent to setting the yard 30° aft of athwartships (on the leeward side). This is 15° flatter than the Old Seaman's and 45° flatter than my setting. If the sail were set according

to the Old Seaman's rule, the slip would be somewhere between 15° and zero. Therefore the data Mr King-Webster mentions are presumably not applicable to my experiment. I specifically stated that in all cases the sail was trimmed into the wind. It is obvious that by doing this a force factor is produced by the sail which completely balances the leeway forces up to 30° . For courses of less than 30° away from the wind the sail would have to be set squarer to the wind for maximum efficiency. If trimmed into the wind when heading dead downwind the sail would not deliver the maximum driving force, and the boat would theoretically be pulled to the leeward side of the sail.

Table 1

Heading away from path of wind	Old Seaman's rule: position of yard on leeward side relative to athwartships	Angle between yard and wind on windward	Bowen's position of yard on leeward side relative to athwartships
0°	Athwartships	90°	
30°	15° aft	75°	15° forward
45°	$22\frac{1}{2}^\circ$ aft	$67\frac{1}{2}^\circ$	Athwartships
60°	30° aft	60°	15° aft
90°	45° aft	45°	45° aft
120°	60° aft	30°	75° aft

Mr King-Webster says that I took only four observations (in fig. 4) with the boat headed between dead downwind and 85° away from the wind. Here he has obviously not read my paper carefully. I stated that the tabulation from which fig. 4 was drawn was an average of the results from a number of experiments. Since I chose course settings in increments of 10° away from the path of the wind up to 60° , the set-points (headings) are the same. Actually in the range Mr King-Webster mentions, 30° – 60° , the plotted points consist of an average of around a dozen individual determinations for each point. In this range the data were extremely reproducible, and the tabulation indicates that these points are accurate to plus or minus 2° . It could be pointed out that the data for 30° and 40° of 10° and 20° slip look rather 'round'. This is due to my method of reading the slip-gauge: I read it to the nearest 5 or 10 units. And in these particular cases the string fell within the 2° deviation of the indicated readings, usually almost exactly on 10° or 20° . Above 60° the data were neither reproducible nor steady during any particular run. This is indicated in the tabulation by a range of 5° in the readings, and indicates that in one instance it may have been 35° and in the next 40° . In general I would say that day after day I was able to reproduce the data in the range Mr King-Webster questions in a variety of sea and wind conditions. I believe the data to be very accurate for the stated conditions of the experiment and the hull used. I feel confident that anyone attempting to duplicate this experiment would obtain substantially the same results with a similar hull. Mr King-Webster suggests that I continue my experiments on a dinghy hull (to substantiate his conclusions). I would point out that in the scientific world it is not customary for one to categorically reject another's experimental work only because its results are 'surprising' and not in accord with some other data. Mr King-Webster says that he has a dinghy with a mast stepped far forward. It would seem that he might be inclined to hang a square sail from his mast and see what kind of results he gets. However, since it is not apparent whether he brought this dinghy back from India, or what its lines are, he should also publish these with any work he does. I very carefully showed the lines of the hull I used just in case someone did want to run the experiments on a different type hull.

After rejecting my experimental evidence and suggesting that I used the wrong type of hull in the experiment, Mr King-Webster strangely does not come to conclusions which differ too much from mine. He says that the Egyptians should certainly have made good a course 30° from before the wind (I said that they did not realize more than 30°) and that with a ship like Sahure's they might well attain 50° or even more when loaded. His 50° is based on the assumption that these boats were round in section. If he were restricted to flat-bottomed hulls he would

be forced to lower this figure. In my original paper I pointed out that opinions of scholars as to how well Egyptian vessels with tall square sails could utilize a wind varied from (1) only dead downwind, and (2) with the wind on the beam. Actually I failed to mention a third suggestion that they could sail these vessels into the wind (from 90° to 135° away from the wind).⁽⁹⁾ Even with Mr King-Webster's disagreements the matter has been narrowed down to a rather small range: I say 30° from before the wind, Mr King-Webster says 50° . There are so many variables that there is obviously no one specific answer in degrees, but probably a range. It may be 30° plus or minus some figure, or it may be higher as suggested. Perhaps further work by other investigators will narrow the range further. But we have definitely progressed a long way from the previously published estimates. They could certainly do more than sail dead downwind, but undoubtedly never realized any course approaching 90° away from before the wind.

RICHARD LEBARON BOWEN, JR.

References

- (1) *M.M.*, Vol. 46 (1960), p. 150.
- (2) W. M. F. Petrie, 'Egyptian Shipping', *Ancient Egypt and the East*, 1933, pp. 4-6, nos. 6-8, 11, 15-17.
- (3) C. Boreux, *Études de nautique égyptienne* (Cairo, 1925).
- (4) E. Assman, 'Die Schiffsbilder', in L. Borchardt, *Das Grabdenkmal des Königs Sahu-re* (Leipzig, 1913), fig. 18, p. 155, republished in *M.M.*, Vol. 46 (1960), fig. 3, p. 5. Reconstructed models of these ships with round bottoms are shown by R. O. Faulkner, 'Egyptian Seagoing Ships', *Journal of Egyptian Archaeology*, vol. 26 (1940), pp. 3-9, pls. II-III, and L. Casson, *The Ancient Mariner* (New York, 1959), pl. II. Both of these latter reconstructions are also incorrect in showing sails without booms. There is no evidence to show that the boom was not used continuously down until about 1200 B.C.
- (5) T. C. Lethbridge, *Boats and Boatmen* (London, 1952), pl. IV, shows a great *saverio* being launched. J. Guthrie, 'Bizarre Craft of Portugal', *M.M.*, Vol. 35, pp. 166-81, shows the lines of both of these boats. However, similar boats I examined in Portugal in 1954 and models I have of these do not show the straight run of planking along the central section of the bottom; they are more like the Egyptian prototypes.
- (6) The general lines of this type of boat are shown in R. L. Bowen, Jr., *M.M.*, Vol. 42 (1956), pp. 256-8.
- (7) *M.M.*, Vol. 45 (1959), p. 334.
- (8) A. Köster, *Das antike Seewesen* (Berlin, 1923), p. 38.
- (9) C. Boreux, *op. cit.* pp. 385-6.

THE UNIFORM OF MIDSHIPMEN

It is often stated that the midshipman has worn the distinctive white patch on his collar ever since the first introduction of uniform for officers in 1748, there being quoted in support the regulations of 1787 which refer to a 'stand-up Collar, with small White Turnback as before'.

I challenge this theory. The wording of the regulations of 1787 provides no evidence that the turnback had been worn since 1748, only that it was being worn in 1787 immediately before the new description appeared. The absence of any intermediate regulation specifically introducing the turnback is not to be wondered at. No doubt it was a development introduced by convenience and fashion. Such changes of uniform due to fashion have occurred all through its history. Sometimes these changes have been subsequently adopted by the Admiralty, sometimes it has repudiated them.

I should like to quote two instances illustrating this point, both of which occurred during the First World War. Certain officers of the R.N.V.R., I believe in the Mediterranean, disliked the white tunic with its stand-up collar worn with neither shirt-collar nor tie. They started wearing shirt-collars and ties and turning down the collars of their tunics. From this it was an easy step to have a white coat made with a turn-down collar. The fashion spread and finally was accepted by the Admiralty.

The case of the monkey-jacket took a different turn. This was originally designed to be cut for five buttons each side, four to button. After a while the fitting of the fifth button fell into disuse and ultimately it was officially discarded but when many officers adopted a jacket cut for four buttons, three to button, following the example of Earl Beatty, no change in the regulations followed.

To return to the midshipman, there are two early sources of information concerning their original dress. One is the Reynolds portrait of Francis Holburne and his son, painted in 1756-57. Here the son wears a midshipmen's coat which has a white turn-down collar, lined underneath with blue (Fig. 1). The other example is one of the actual pattern coats of 1748, formerly in the Museum of the Royal United Services Institution and now in the National Maritime Museum. This most interesting coat has the circular open neck commonly worn at the time without a collar, but has a collar fitted. The collar is now only partly stitched to the coat by tacking threads which are of later date so that the exact way in which it was sewn is a matter for conjecture. There are, however, signs on the coat that it originally had a collar attached and we can dismiss any suggestion that the collar does not belong.

The collar is a strip of white velvet approximately $19\frac{1}{2}$ in. by 3 in., lined beneath with blue cloth. One edge is straight; the other is shaped to a slight inward curve over the middle $9\frac{1}{2}$ in. At one end, on the blue side, is a small button, at the other end is a button-hole. A sketch published at the time of the first discovery of the coat¹ shows the collar attached to the coat by the shaped portion only so that when turned down it showed the white side and the two 5 in. ends hung loose (Fig. 2). A photograph, taken I believe about the beginning of the present century, shows

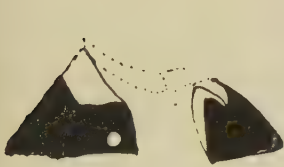


Fig. 1

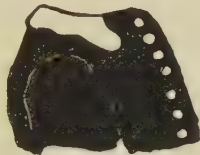


Fig. 2

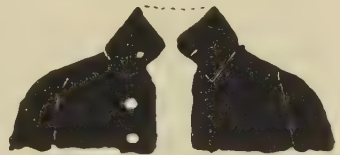


Fig. 3



Fig. 4



Fig. 5

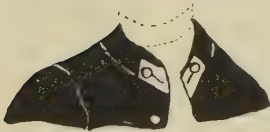


Fig. 6



Fig. 7

Fig. 1. Francis Holburne, by Reynolds, 1756-57.

Fig. 2. Coat of 1748 as illustrated in *Nautical Magazine*, 1846.

Fig. 3. Coat of 1748 as exhibited about 1900.

Fig. 4. Coat of 1748, collar turned down.

Fig. 5. Coat of 1748, collar turned up.

Fig. 6. Duke of York and Albany, 1758.

Fig. 7. James Ward, 1775.

¹ *Nautical Magazine*, 1846, p. 142.

that the collar had then been taken off and partly attached to the coat by its outer edge, so as to look like a blue turn-down collar with the button showing on the right side (Fig. 3). With this method of assembly the collar cannot have fitted properly to the coat and the button was so placed that it could not be used under any circumstances.

I am certain that the collar was originally fitted as found and was normally worn turned down to show the white side (Fig. 4). In inclement weather the midshipman could turn his collar up and button the ends under his chin, the blue side being then turned outwards—the white velvet would be comforting against his neck (Fig. 5).

The patch first makes its appearance in an engraving of Edward Augustus, Duke of York and Albany (Fig. 4). This engraving is believed to have been derived by altering the plate from an original of the Prince in which he wore plain clothes. It is therefore pretty certain that the engraving must have appeared in 1758 during the short period when the Prince was serving as a midshipman. It would not have been issued after he had held a more senior rank.

In this portrait the coat at first glance appears to be collarless, but on close examination a faint line, apparently indicating the base of a low collar, will be revealed. This collar bears typical white patches of which the right-hand one is clearly seen to be a turn-back flap.

The next midshipman's portrait which I have been able to trace is that of James Ward, painted in 1775 (Fig. 7). In this the neck of the coat has definitely grown a stand-up collar, similar to that on the undress coats of lieutenants of 1748.

In a bad portrait of Edward Riou executed by an unidentified artist of 1775 the coat appears to be of the collarless type common in 1748, but has a pair of patches at the corners which, in such a coat, would appear to be pure decoration. The portrait is, however, too poor to be of use as unsupported evidence.

I must now put forward my theory. I believe that as originally designed the coat, though its basic design would have been without a collar, had a collar added to it which could be turned up in bad weather. It must be remembered that the Midshipman was the only officer with a single all-purposes coat. Each of his seniors had a dress coat, and a frock which had lapels that could be buttoned across and a collar. The midshipman's collar was white outside and blue underneath and when turned down had its ends hanging loose. These must have been rather inconvenient and I suggest that custom developed in two directions. Either the ends of the collar became attached to the coat and an ordinary turn-down collar developed which could not be conveniently turned up and buttoned across. This is the collar shown in the Reynolds portrait of Holburne's son. In the second development the collar became a stand-up one, blue outside and white inside, and had flaps at the end which could be buttoned across, or buttoned back out of the way revealing a white turn-back which finally became a fixture. A turn-back flap of this nature appears on the flag-officers' unauthorized undress of about 1774, where it is quite distinct from the lapel.

The fact that McArdell was amending a plate when he executed the engraving of Edward Augustus probably accounts for the lowness of the collar, but this engraving does definitely confirm that *some* midshipmen, if not all, were wearing the patch in 1758. Its adoption was possibly a slow process spread over several years. The fact that it was more than a quarter of a century before the patch was recognized in regulations is not surprising. Was not the cocked hat worn fore-and-aft for three times as long before that change was officially noticed.

With the exception of the collar and cuffs the cut of the midshipman's coat of 1748 was exactly the same as that of the lieutenant's full dress—single-breasted with twelve smooth domed buttons down the front, a slit up the back skirt with one small and one large multiple plait on each side and a large flap pocket on each hip. The 4 in. white cuff was narrower, being only 7 in. wide instead of 10 in., and had a three-pointed blue slash, $2\frac{1}{2}$ in. wide and 7 in. high.

No change occurred in the regulations until 1787, but the shape of the coat must have altered gradually, following fashion, this being vouched for by the Ward portrait. In 1787 the cuff was changed to plain blue with three buttons and corresponding button-holes of twist. The collar was a stand-up one, with the white turn-back, and engraved anchor buttons replaced the plain domes. The number of buttons down the front may have been reduced to nine at this date but it is more likely that this had happened earlier, perhaps about 1767, in conformity with other

uniforms. The uniform of 1787 remained unchanged on paper until 1890, except that in 1812 and 1827 the button followed that of the commissioned officer, in 1825 the number of buttons down the front is specified as nine for the first time and in 1828 midshipmen were informed that their coats must be worn buttoned following the regulations of 1827. Even then the coat was subject to change of shape in the same way as other uniforms and in particular the very high collar and the narrow sleeve with a slit and two cloth buttons worn about 1830 will be noticed.

In 1890 the midshipman at last gave up his tail coat and changed over to a round jacket. He had of course, like his seniors, worn the older type of round jacket as a working rig for about a century and had followed them in adopting the monkey-jacket for everyday use.

Unusual coats may be met with from time to time in portraits of midshipmen and there is no means of telling whether these are the result of ignorance on the part of the artist or idiosyncrasies of the wearer. Examples of such are two portraits in the National Maritime Museum, one of a midshipman of about 1805 in a double-breasted coat, a feature never permitted to a midshipman. The other is of John James Allen in 1819 who seems to have gone in for the enormous number of fifteen small buttons down the front.

The early story of the midshipman's uniform still needs some clarification and I would be grateful to anyone who could bring to my notice any other contemporary pictures of midshipmen, whether portraits or as incidental characters in scenes or groups, before 1825 and particularly before 1787.

W. E. MAY

QUERIES

28. (1960.) THE ARMADA. Professor Mattingly, in his current best-seller *The Armada*, again relates the popular thesis that the shipload of barrel staves captured by Drake after his raid on Cadiz in 1587 contributed to spoilage of the food and water supply aboard the Armada of 1588. Is there actually any contemporary evidence to confirm that the captured staves were earmarked for use in casks to store supplies for the Armada? Was the loss of that particular ship or cargo noted in any of the Spanish records pertaining to the preparations of the invasion force? Or, is this merely supposition based on the fact that Drake was recorded as capturing a shipload of staves in 1587 and the Spanish Armada did experience extensive spoilage of its food and water supplies in 1588? As Spain was a major wine producing nation, it seems odd that they should experience such a shortage of casks that one shipload could create an emergency, doesn't it? Was not the spoilage aboard the Armada rather to be expected among such fleets in those days (witness Drake's own fleet of 1587 and the English fleet opposing the Armada in 1588)?

TOM GLASGOW, JR.

ANSWERS

30. (1959.) CRIMPING AND SHANGHAI-ING. The crimp found the seaman a ship. For this service he took the seaman's advance note, at a discount, and discharged the seaman's debts, which were often owing to the crimp himself in his capacity as lodging-house keeper, or publican or clothier. The crimp on top of this deducted a fee for his services, and was sometimes paid by the ship as well. He would make over the balance, if any, to the seaman as a cash advance. His concern then was to see that the seaman got aboard in time, and to this end he encouraged the seaman to get drunk, and so put him aboard thoroughly intoxicated. If the crimp was the publican there was thus a further profit at this stage of the game. The period, generally two months, while the seaman was working out his advance was called a 'dead horse', and no doubt that is what one finds not worth flogging. If, in this context, flogging means selling, as it might, it refers to the fact that the master would not sell clothing to a seaman while he owed the money for his advance.

There were so many acts insisting that the seaman should not go to sea without signing the articles that one suspects that the law's intentions were frequently frustrated. Such acts were passed in 1835 (5 & 6, W 4, c 19), 1845 (7 & 8, V, c 112), and 1850 (13 & 14, V, c 93). No doubt there were later acts repeating the same regulation, but I have not examined them. Sir James Bisset (*Sail Ho*, Angus and Robertson, 1958) says that at the end of the last century there were always a few men hanging around the dock gates ready to make a pierhead jump. Obviously they went to sea without signing articles first.

The crimp had by an act of 1845 (8 & 9, V, c 116) to be licensed, and it was laid down that no advance notes were to be issued until the articles were signed.

W. S. Lindsay, in *The History of Merchant Shipping* (Vol. II, ch. XIV), gives an account of the crimp's activities. There are also references to crimps in the Select Committees on Shipwrecks in 1836 and in 1843. Thomas Brassey in his *British Seamen*, which was based on 'Recent Parliamentary and Official Documents' (Longmans, Green & Co., 1877), shows that it was to the interest of the owners to retain the Advance Note system, since the offer of ready cash to the seaman before the voyage began enabled them to lower wages. Robert Woodward (*Nigh on Sixty Years at Sea*, Digby, Long and Co., London, no date) explains the connexion between crimping and desertion in Quebec, and describes the manning of a ship by a crimp. Frank Bullen, in *The Log of a Sea Wolf* (Smith, Elder and Co., 1899), gives an account of the system in ch. XIX. C. R. Benstead, in *Atlantic Ferry* (Methuen and Co., 1936), uses the word crimp to describe the 'combined ship chandlers and ticket agents' who swindled the ignorant emigrant and then pushed him aboard the packet which paid the crimp the best commission. He also gives an account of the activities of a Liverpool crimp, who was supposed to have asked a man to walk round a bullock's horn so that he could tell the master that he had gone round the Horn. A similar story is told by R. A. Rydell (*Cape Horn to the Pacific*, California and Cambridge, 1952) about a San Francisco crimp called Mike Connor. C. Northcote Parkinson, in *Trade in the Eastern Seas* (Cambridge, 1937), explains that in wartime one of the crimp's most valuable services was hiding the crew from the Press Gang. They were said to be of that class 'from which we derive informers, thief takers, sheriff's officers, executioners, and other odious, though necessary appendages to civil authority'.

It will be seen that the crimp performed a useful function in the shipping industry of the mid-nineteenth century. He was enabled to fulfil this function because the seaman was a fool ashore, whatever he was aboard ship, and because economic pressures—that is sheer hunger—forced the seaman into the crimp's hands.

As the century went on the better education of the seaman, the stricter enforcement of the law by the Shipping Masters, the use of savings banks, the better policing of the dock areas, and perhaps greater sobriety—for drink was the crimp's best ally—all tended to make the legitimate business of the crimp less profitable. The steamer also helped to end crimping, because the advantages of steam were nullified if the ship had to wait at Gravesend while the crimp put the intoxicated crew aboard, and then remain waiting until they sobered up. Higher overheads made such delays impossible. Therefore the steamers paid higher wages than the sailing ships, and got men, who whatever they were like as sailors, had more sense ashore than the shellbacks. Regular sailings and voyages which lasted less time came to mean that men signed on again and again in the same ship.

In foreign and colonial ports the crimp resorted to force. Quebec, Portland (N.S.W.?), Newcastle (N.S.W.), New York, and Callao seem to have been ports notorious for the crimps who persuaded seamen to desert, and then reshipped them, recovering far more than their expenses from the advance notes for two months' pay. In these places lawful crimpage had become a gangster type racket, and it is the kidnapping of seamen which is strictly called shanghai-ing, but the confusion of roles is well shown by a conversation at the beginning of P. A. Eaddy's *Hull Down*, ch. 1 (Andrew Melrose, 1955). A man tries to persuade Eaddy and his friend to sign on for various ships, but they refuse, and the man 'went off in a tantrum. Alright, my lads, don't you ever come to me to place you in a ship. You're too damned particular for my liking. Just you wait till some of the boarding-house masters in Newcastle or Nigger Thompson in Val-

paraiso get hold of you: they won't ask you whether you'll go in a ship, they'll just put you aboard.'

'That remains to be seen', we told him, as he strode off down the street in high dudgeon.

'Who is he?', asked Billy, after he had gone.

'Oh, that's Old Shanghai Jensen', I said, 'Have you never run across him before?'

'No, that's the first time I've met him: who does he shanghai these days?'

'Nobody that I know of: he is often engaged by the masters of vessels loading at the Kaipara and such places to hunt up a few hands when they are short. There are not enough deep-water-men coming to Auckland these days for a man to make a living keeping a sailor's boarding-house and supplying captains with crews.'

'It's still done in Newcastle, though', said Billy. 'Only last trip when I was there in the barque *Emerald* I was nearly shanghaied through staying ashore at the Black Diamond. We were all having a few drinks in a back room, when all of a sudden I dozed off, and the next thing I remember was being flung down in the bottom of a boat near the Dyke Ferry landing.'

'What happened then?', I asked.

'What happened? I up and off for my life. A big German full rigged ship was laying out at the last farewell buoy, loaded for the West Coast, and it was for her the boat was bound.'

Crimping, like so many other institutions, began by fulfilling a useful function, and the crimp was in a way the seaman's friend, but circumstances changed and the crimp became the seaman's enemy. Then he resorted to force to maintain his trade, and this was for some reason called shanghai-ing. The two words thus sum up much of the story of the merchant seaman's progress in the Age of Transition.

1. (1960.) WINTER GUARD OF 1643. Parliament employed 21 royal ships and 24 merchant ships in the Winter Guard of 1643, according to the Navy Commissioners' estimates (Rawlinson MSS. A 223, 75). The names of 14 of the merchant ships which it was intended to continue in service for the Winter Guard of 1643 are listed (Rawlinson MSS. A 223, 11): they are *Leopard*, *Friendship*, *Speedwell*, *Providence*, *Blessing Shaftor* (i.e. Thomas Shaftoe's ship), *Joslyn*, *Elizabeth and Ann*, *George Dover*, *James Yourghall*, *Prosperous*, *Blessing*, *Ann and Joyce*, *Lucie*, *Adventure Hull*. All these ships, except the last two, appear in the list of the Summer Guard of 1643.

D. E. KENNEDY

13. (1960.) HOISTING AND HAULING DOWN THE WHITE ENSIGN. This question was asked and answered in the very first issue of *The Mariner's Mirror*. The answer, supplied by W. G. Perrin, was as follows: 'The time was first laid down as 8 a.m. from 25 March to 20 September, and 9 a.m. from 21 September to 24 March, in the King's [Queen's?] Regulations of 1844. The correction is in MS. in a proof of 1843.'

R. C. ANDERSON

Here follows an extract from *British Flags* (pp. 197/8), by W. G. Perrin (C.U.P. 1922).

'The modern practice, for all ordinary occasions, is to hoist the national colours in the morning and keep them up until sunset, but innumerable references to hoisting or 'heaving out' the colours indicate that in earlier days this was not the custom, and that they were only hoisted at sea when there was some special reason for doing so. There was a routine for hoisting the flag in harbour in the time of Elizabeth, for the orders for Drake's fleet in 1589 and the "Brief Noates" of John Young circa 1596 both contain an article to this effect, those absent without leave at the time being deprived of their "aftermeal", but the hour at which the ceremony took place is not stated. The practice at the end of the eighteenth century, as related by Wm Spavens (in his *The Seaman's Narrative*, 1796, p. 127), Pensioner on the Naval Chest at Chatham, was as follows:

"At sunrise every ship in the fleet hoists her colours viz the ensign and jack, unless it blows hard and the yards and top masts are struck, in which case the colours are not hoisted but when some vessel is coming in or passing; at half past 7 o'clock the drums begin to beat and continue till 8, when the ship on board which the Commander in Chief hoists his flag, fires a gun."

We do not know when this practice of hoisting the colours at sunrise was first instituted, but it is not older than the seventeenth century. In 1844 the time was altered at 8 a.m. from 25th March to 20th September and 9 a.m. from 21st September to 24th March. If there is sufficient light for the ensign to be seen, it is hoisted earlier or later than these hours, if the ship is coming to an anchor, getting under way, passing or meeting another ship, approaching a fort or town, etc.'

H. GRESHAM CARR

14. (1960.) NAIL COLOURS TO MAST. The Union Flag was nailed to the mast during the siege of Lucknow in 1857. In order to commemorate its relief it was decided that henceforth the Union Flag should be flown by day and by night. This custom continued until midnight of 14 August 1947, when India attained self-government.

H. GRESHAM CARR

17. (1960.) WHELPS. It is not clear whether this Query refers to a ship-name or class-name, or to the name of a fitting. If the latter, the 'whelps' were the upright cleats spaced round the body of a capstan. As far as I know, there were only two ships called *Lion's Whelp* in the Elizabethan navy. The first was built in 1590 and lost at sea in 1591; the second bought in 1601, rebuilt in 1608 and given away in 1625; this was a ship of 90 tons. In 1628 a class of 10 *Lion's Whelps* appeared. They were usually called *First Whelp*, etc. and were intended to act against the privateers of Dunkirk, but proved too slow and too unseaworthy.

R. C. ANDERSON

REVIEWS

THE SPANISH ARMADA. By MICHAEL LEWIS. Batsford. 9×6 inches; 216 pages; illustrations; maps; index. 21s. net.

Members of this Society will probably be aware of the British Battles Series. The aim is to present an authoritative narrative of a particular battle, its ramifications, its survivors, accounts, and to embellish it, wherever possible, with the best contemporary work in the graphic arts. So far, most of the authors have been content to summarize and re-arrange material already in print, and they have been comparatively brief. Our President, as might have been expected of him, has written about the Armada not only fully, in so far as the actual fighting is concerned, but he has included a structure of original work, particularly on the English and Spanish ordnance, resulting from his studies first published in this *Journal* during the years 1942-3. A note in his Preface gives the good news that these articles are themselves to be re-published in book form, so that it will be no long wait before the great encounter of 1588 is as well described as we are likely ever to have it.

The first question most readers will ask is, how does Professor Lewis's book differ from that of Professor Mattingly, which has lately been in the best-seller lists, and which Professor Lewis himself generously reviewed in the columns of the *Listener*? The short answer is that one is a general and the other a particular picture. Mattingly takes Europe as his background, and makes the encounter itself comparatively subordinate. Our President, though he does not disregard the wider scene, takes one aboard the ships, shows how their guns were used, how their officers and men were assembled, and in short makes us feel we were present. There is ample room for both books, and readers are lucky to have them. In the second impression of Professor Lewis's, and assuredly this will be called for, he could add to our gratitude by at least a brief note on the literature of the subject, which he has so well digested.

Another difference between the two recent accounts is in the portrait given of Medina Sidonia. The reader rising from Mattingly's pages will have been impressed by his competence, even though so diffident a man. It is otherwise with this book. Medina Sidonia seems as nebulous a creature as his portrait suggests, and I for one suspect that Professor Lewis is the nearer to the truth.

It should be said that while nothing in this study alters the main outline of Philip II's invasion story and its failure, there are certain new stresses. The first of these is on supply. On the whole,

the English distant gunnery tactics, new as they were, were effective: they did the job, and provided lessons for the future. What was almost comically chronic was the shortage, throughout the whole campaign, of the principal sinews of war—victuals and shot. The story of how the English fleet was provided, the makeshift resources it had to depend on, the impossibility of proper signalling, and the general lack of detailed tactical co-ordination, makes the student realise, with all the clarity possible, that the Armada took place in the infancy of scientific sea warfare, and that the whole affair, to borrow a phrase of Wellington's, was a damned close run thing, as tense as it was important. In fact, as in these pages, there is not a dull moment.

OLIVER WARNER

LA MARINE DE L'AN II. MOBILISATION DE LA FLOTTE DE L'Océan, 1793-1794. By NORMAN HAMPSON. Librairie Marcel Rivière. 6 x 4 inches. (No price given.)

Mr Hampson has written a book in French which is the result of extensive research into the archives of the Ministry of Marine. The subject will not be familiar to English readers brought up in a somewhat insular tradition of naval history, hence the value of the work. For example, it will come as a surprise to learn that the rate of construction in French ports would have soon resulted in a numerically superior fleet, had it not been for the defection of the force at Toulon. Mr Hampson is properly critical of the fatuous strategic ideas of the Committee of Public Safety, but he does justice (as Lévy-Schneider did fifty years ago in his monumental biography of Jeanbon St André) to the energy and patriotic enthusiasm displayed during this brief period of French naval revival.

The fleet which fought at the Glorious First of June was not an enemy to be despised, nor were the administrative talents of Jeanbon those of a mere propagandist commissar, as he appears to so many English writers. However, even if he had been as successful at Toulon as he was at Brest, and even if the French had succeeded in building more ships, it is very doubtful if the Jacobin navy could have withstood the British for long. Having purged almost the whole officer corps in true Stalinist style, the commanders were bereft of tactical experience. The vaunted 'inscription maritime' seems to have been an even more inefficient way of recruiting men than the rough and ready methods of the Impress Service on this side of the Channel. Nor would the undisciplined and unhealthy crews have ever been a match for the English in the long run, however violent their republican enthusiasm in 1794.

On the subject of 'personnel' and 'matériel' there is a great deal to be learned from this book. The chapter on Jacobin strategy is excellent, though the treatment of tactical ideas is less satisfactory. What is most illuminating is the very detailed study of construction in the Biscay ports: unfortunately the author keeps close to his subtitle, 'la flotte de l'océan'—so that Toulon and Marseille are outside his scope. The Republic inherited the genius of Sané as its chief naval architect, together with the ships he had built before it came into existence, such as the great 118-gun *Commerce de Marseilles*, ignominiously lost at Toulon, of which Nelson said 'The *Victory* is nothing to her'. (Can anyone explain why better use was not made of this fine ship after her entry into the British navy?) And also the 80-gun *Sans Pareil* which, to British eyes, was the finest two-decker and the best sailer afloat. Mr Hampson describes her unhealthy state on the eve of Howe's victory. He does not mention the evidence of the surgeon of the *Majestic*, which captured her, that she caused more damage after the battle than during it, because 68 men were infected by the typhus (the 'putrid fever' mentioned here) caught from the 200 prisoners taken on board, many of whom also died.

Inheriting a navy at the lowest point of its efficiency, the Jacobin government spurred it on to the extent of making it a serious threat to the enemy. But the weakness of that navy lay in the unstable nature of the politicians who controlled it. The French naval effort collapsed in 1794 not so much as the result of defeat at sea, but with the death of Robespierre six weeks after Howe's victory.

CHRISTOPHER LLOYD

THE BATTLE OF THE NILE. By OLIVER WARNER. Batsford. $9\frac{1}{2} \times 6$ inches; 176 pages; illustrations; index. 21s. net.

There has recently been in this country a distinct revival of interest in Nelson, and the wars in which he fought—an interest which Mr Oliver Warner has had no inconsiderable hand in stimulating. One result of this is that it is not easy at this late date—indeed perhaps not possible—to introduce into one of the great man's great battles any considerable body of original research. The field has already been too carefully gleaned. Indeed, it is clearly not Mr Warner's intention to approach 'the Nile' in the role of purveyor of fresh material. His aim, as I see it, is rather to present the scenes and episodes which go to make up campaign and battle as a unified, close-up picture, dramatic, but not over-dramatized, designed to take its place in a gallery of other pictures similarly conceived and of a similar genre.

Thus regarded—and there is no other fair way of doing so—the book is an unqualified success, good alike in straight narrative, in characterization and in clarity; bringing vividly to life the problems and the personalities on both sides; what they did, how they did it, and why, and what were the principal results of their actions. On only one point, and that purely one of proportion, I would perhaps venture a minor criticism—a matter rather of art than of history. Does the author tend to carry on the story too long—out of the theme 'the Nile' and into other themes *not* strictly 'the Nile'? It is not that the last chapters are intrinsically uninteresting or unimportant: emphatically, they are neither. They are not open to criticism in detail: they are not inapposite as history. But are they quite relevant *here*? The broad 'results of' must of course be included. But does the introduction of other characters—Sidney Smith, Lady Hamilton, Bruix—whose connexions with the Battle of the Nile itself are distinctly slender, perhaps distract the reader's attention from the clear-cut outline of that battle, so happily achieved in the main body of the book?

This, however, is only a matter of personal opinion. Nothing obscures that clarity of presentation itself.

PROFIT AND POWER. A STUDY OF ENGLAND AND THE DUTCH WARS. By CHARLES WILSON. Longmans, Green and Co. 4to. vi + 169 pages. Frontispiece and two sketch-maps. Price 25s.

In the reviewer's opinion the subtitle of this excellent little book is rather misleading since it ends with the Treaty of Breda in 1667, and not, as one would logically expect, with that of Westminster in 1674. Admittedly, the author argues strongly (pp. 143, 154) that 'the Treaty of Breda brought to an end an era of more than half a century during which hostility to the Dutch had become a habit of thought with Englishmen, cutting across differences of birth, class, occupation and outlook', but still stronger arguments could be adduced for making 1674 rather than 1667 the real turning-point. Even though the outbreak of the war in 1672 did not arouse the same enthusiasm as Charles II's belated declaration of war in 1664, yet the third Dutch war was far from being unpopular in the country at its outset. Even the Parliament of February 1673 agreed with Shaftesbury's description of Holland as the 'Carthage which must be destroyed', and widespread criticism of the French alliance only came with the rapidly mounting fear of 'Popery' in the summer and autumn of that year, as recently demonstrated in K. H. D. Haley's *William of Orange and the English Opposition 1672-1674* (Oxford, 1953). In 1672 the Dutch were still looked on by many (perhaps by most) people as England's natural enemies; and apart from anything else there was a general desire to avenge the humiliation of De Ruyter's raid up the Medway in 1667. Mr Wilson's study is principally concerned with why the first two Dutch wars were fought, and, as he himself says: 'the manner in which they were fought is only related in so far as it throws light on the former problem'. In other words, it is the interdependence of trade and sea-power as viewed by the seventeenth-century statesmen, sailors and merchants on both sides of the North Sea which constitutes the principal theme.

The first half of the book traces the growth of Anglo-Dutch rivalry in many fields from the reign of James I to the end of the first Dutch war, and the second half discusses the subsequent developments down to the Treaty of Breda. In chap. I, 'Profit and Power' (a quotation from Sir Josiah Child's *New Discourse of Trade*), the precarious nature of the economy of the Dutch Republic is well brought out, and its dependence on freedom from warlike entanglements is emphasized. 'Above all things war, and chiefly by sea, is the most prejudicial, and peace very beneficial, for Holland', wrote Pieter De La Court in his celebrated *Interest van Holland* of 1662; but this desideratum was not easily achieved in a century which (as Mr Wilson reminds us) saw only one year of peace (1610) between 1600 and 1667. England's strategic and economic situation was much sounder, as Mr Wilson has no difficulty in showing and as many contemporaries recognized. The very existence of the Dutch Republic depended on keeping her seaborne trade moving, whereas England, being still essentially an agricultural country, could afford to do without foreign trade for much longer if necessary.

Chapter II ('Representative thought and national policy') is chiefly devoted to a discussion of the ideas expressed and the policies advocated in Pieter De La Court's above-mentioned *Interest van Holland* (1662), which was written in partial collaboration with Jan de Witt, and Thomas Mun's *England's Treasure by Foreign Trade*, which, though published two years later had actually been written about thirty years earlier. The English work, though a more specific and limited survey, had an equally great influence in its day and generation, and Mr Wilson's comparison of these two famous books is very illuminating. Chapter III discusses the principal causes of Anglo-Dutch economic tension including the struggle for the cloth-trade, the disputes over the 'Great Fishery' and the sovereignty of the 'British Seas', the arguments over the right of search, contraband, etc., and colonial quarrels in the Indies. The technical superiority of the Dutch banking and shipping systems enabled the Hollanders by 1650 'to capture something like three-quarters of the traffic in Baltic grain, between half and three-quarters of the traffic in timber, and between a third and a half of that in Swedish metals. Three-quarters of the salt from France and Portugal that went to the Baltic was carried in Dutch bottoms. More than half the cloth imported to the Baltic area was made or finished in Holland. The flow of colonial wares into European consumption was also to a large extent in their hands and . . . it appears that the Dutch may well have disposed of a tonnage at least five or six times that of England' (pp. 41-6). Small wonder that the English were green with jealousy, especially as all efforts to reduce the Dutch lead in these fields had dismally failed before the implementation of the first Navigation Act in 1651.

Chapter IV ('War in embryo') discusses the increase in Anglo-Dutch friction in the years 1649-52, at a time when one might have expected that the Puritan Commonwealth and the Calvinist Republic would find it possible to reach an amicable agreement. Serious efforts were indeed made to this end, but the deep-seated economic rivalries proved too strong to be erased, and the passage of the Navigation Act, 'designed to drive the Hollanders from those trades which they had monopolized to the prejudice of the English' (p. 57) led to a further sharp deterioration in Anglo-Dutch relations. The Act was not, however, the actual cause of the outbreak of war in 1652. This was due primarily to disputes over the 'honours of the flag' and the right of search which culminated in the clash of Blake and Tromp off Dover in May of that year.

Chapter V briefly considers the first Anglo-Dutch war of 1652-54, in the decisive region of the North Sea and the English Channel. The fighting in the Mediterranean and the East Indies is not mentioned, presumably because the Dutch victories in these theatres were of no avail against their defeat in the North Sea. England's strategic advantages and the difficulties attending the organization of the unwieldy Dutch convoys are clearly expounded, with a glance at our own convoy problem in modern times. Although the traditional assertion that by the end of the war the grass was growing in the streets of Amsterdam is a picturesque exaggeration, there can be no doubt that the war was disastrous for the Dutch. A catastrophic drop in the Customs yields and the loss of a large number of rich prizes proved the magnitude of their defeat. But if English trade had gained by the blockade of Dutch ports in 1653, and if English merchants and seamen could look back on the result of the war with considerable satisfaction, this convinced them that

similar results could easily be achieved another time, and thus profoundly affected thought and policy in the early years of the Restoration.

Chapter vi covers the Protectorate Interlude of 1654-1660, when Anglo-Dutch rivalry was centred chiefly on the Baltic and on the implementation of the Navigation Act, the working of which from the English point of view left a good deal to be desired. Cromwell's dream of a Protestant Alliance against Roman Catholic Europe, with a division of the colonial world between the two republics somewhat on the lines of the Hispano-Portuguese Treaty of Tordesillas, foundered on the fact that Spain was Holland's best customer after the conclusion of the Treaty of Munster in 1648. But though Cromwell complained that the Dutch 'preferred gain to godliness', he took care to avoid a renewal of hostilities and his restraint was matched by that of the Grand Pensionary, Johan de Witt, who directed the foreign policy of the Seven Provinces from 1654 onwards. They had a common bond, too, in their opposition to the houses of Orange and Stuart.

Chapter vii ('Foreign Trade and domestic politics at the Restoration') discusses the rapid growth of war-fever in England and the refurbishing and strengthening of the Navigation Act, argely under the guidance of the able if unscrupulous Sir George Downing. To English eyes, the Dutch had made a disconcertingly rapid recovery from the disastrous war of 1652-54, and 'the trade of the world is too little for us two, therefore one must down', as a bellicose Baltic merchant told Samuel Pepys in February 1664. King Charles and Clarendon for some years acted as restraining influences, but the Anglo-Dutch Treaty negotiated by the latter in 1662 proved even more ephemeral than most treaties. The Court, the City of London, the Duke of York and the shareholders of the Royal Africa Company were all 'mad for a Dutch war', while on the other side of the North Sea the Dutch, as Downing noted, were all for '*mare liberum* in the British Seas but *mare clausum* on the coast of Africa and in the East Indies'.

Chapters viii and ix describe the approach and the course of the war which began with the brilliant victory of Lowestoft and ended with the bitter humiliation of Chatham. This is familiar ground and Mr Wilson has nothing new to contribute here. The war was probably inevitable in any case, but one of the reasons it broke out when it did was Downing's belief, reiterated in repeated despatches from The Hague, that De Witt would continue 'sailing between Scylla and Charybdis', 'shuffle and cut capers', but never actually fight England. Consequently, the English preparations during 1664 were made not so much in earnest as in the hope of effective bluff, and the country was not really ready for the struggle upon which it so gaily embarked.

The book reads very smoothly and contains only a few minor errors. Pulo Run is persistently misspelt Pula Run, and Malaya, on p. 69, is an obvious misprint for Malaga. The East India Company was not pleased to get Bombay in 1662 (p. 118), as this island was ceded to the Crown and was only transferred to the Company in September 1668. On p. 142 it is wrongly implied that the English captured Curaçao in the second Dutch War; and on p. 136 it is stated that Rupert rejoined Albermarle on the second day of the Four Days' Fight (1/11-4/14 June 1666); whereas he did not come up till late on the third day nor enter the battle until the morning of the fourth.

C. R. BOXER

THE DEFEAT OF JOHN HAWKINS. By RAYNER UNWIN. $8\frac{3}{4} \times 5\frac{1}{2}$ inches; 314 pages; illustrations; maps. Price 25s. net. Allen and Unwin.

Here is no work of original scholarship: but the author has hit upon a good idea and, following it faithfully and intelligently, has produced a book which is at once sound history and most attractive reading. The idea is this: to collect from all available sources the surviving material for the third voyage of John Hawkins, and to weave it into a continuous narrative. Much, of course, has been written on the voyage itself and its place in history: for it turned out to be a considerable landmark in Anglo-Spanish relations. Much too has been written on its principal character, John Hawkins himself. What is new here is to give the whole expedition a unity by devoting a whole book to it.

The resulting book is far from thin, for it holds all the ingredients of drama, and exciting drama at that. There is plenty of 'plot', and a wealth of episode, made possible by the fact that so much detailed and personal evidence survives in contemporary narratives, of which those published in Hakluyt's *Principal Navigations* are the chief. There is geographic variety in the story too, since it covers two continents; the one where the trading 'commodity' was obtained, and the one where it was to be disposed of. So we learn precisely how the survivors fared in the fever-stricken estuaries and swamps of equatorial Africa, in the new cities and settlements of America, and as prisoners in the hands of the Mexican Spaniards and, later, the Inquisition. All this is good history, vouched for by the actors themselves.

It cannot be denied, however, that something of technical accuracy has been sacrificed to the exigencies of good story-telling. It is not in the wider flow of that story that the sacrifice appears: the sheer day-to-day history is good and convincing. It is rather in the setting, and especially in the background of life afloat in a Tudor ship. Here the picture presented by the author is replete with all sorts of detail which, *in vacuo* as it were, sound convincing enough. But to anyone familiar with the gaps in our knowledge of what really went on at sea, in sailing or fighting a ship, or simply in living in one, one question is constantly pressing for an answer. How came the author by such intimate details? He never helps us to answer by giving chapter-and-verse for his statements. What authority, for instance, has he for saying that Hawkins held fairly regular gun-practice while crossing the Atlantic, or that he used wind-sails to ventilate between-decks? Or where has he acquired such comparatively intimate knowledge of the working and drill of great guns: or just how they were placed, loaded, reloaded, fired? There are many who would like to know these things, and among them is this reviewer. Seeing, however, that he does *not* know, he cannot perhaps accuse the author of being wrong. He can only say that, in his ignorance, he had hitherto supposed that no one knew so much about the internal economy of a ship of the 1560's. And he may venture to add, perhaps, that what he reads sounds to him much more like what happened at a considerably later period: perhaps a century later, or even more, when evidence known to him is gradually becoming available.

Yet, once we are alive to this danger of 'ante-dating', we shall find a great deal in Mr Unwin's book to study and enjoy, and that without the uncomfortable suspicion that we are being misinformed. For none of the narratives of the persons concerned is open to such doubts: at least, not in the same way, though of course some parts of the narratives themselves we may well feel inclined to take with a pinch of salt. Indeed, the author himself does so, being much too critical to fall for every 'traveller's yarn' he hears.

MICHAEL LEWIS

QUIBERON BAY. By GEOFFREY MARCUS. Hollis and Carter. $8\frac{3}{4} \times 5\frac{1}{2}$ inches; illustrations; maps; index; 212 pages. Price 25s. net.

'It was next a-kin to a miracle that half our ships were not ashore in the pursuit of an enemy upon their own coast, which we were unacquainted with, besides its blowing strong and squally, and having no pilots. I thank God am very well, though almost starved with cold.' So wrote Admiral Sir Edward Hawke to a friend, at home, close upon his great triumph at Quiberon Bay in November 1759.

In confined waters, off an iron coast, and in fading light, Hawke had utterly defeated the main French fleet under Conflans, secured his country from invasion, and given such a close lesson in sea power as was never forgotten by his opponents. It was one of the crowning moments in the Seven Years War, in which the elder Pitt, supreme architect of victory, and Anson, the greatest Admiralty administrator of his time, were entitled to share. Hawke should have got his peerage there and then.

This is a good account of a great subject. At a period when so many battles have been made the core of whole books—a striking development in recent historical writing—it was time that Quiberon came to be shown for what it was, a supreme example of the art of the experienced, bold

and intelligent sea commander, master of the intricacies of the chase. From the event arose a song, *Heart of Oak*, composed by David Garrick and set to music by William Boyce which, as Mr Marcus says, was 'one of the great battle-songs of the world—songs which have helped to shape the course of history'.

A battle considered in isolation is generally meaningless to the layman. By his adequate survey of the wider picture of the later stages of the Seven Years War, Mr Marcus has given Hawke's pursuit and attack its proper perspective. He has written a narrative with the pace, the colour and—for good measure—the scholarship which the subject demands. It should be enjoyed by all who like to re-live the great moments of naval achievement.

OLIVER WARNER

THE GREAT SHIP FROM AMAÇON—ANNALS OF MACAO AND THE OLD JAPAN TRADE, 1555–1640. By C. R. BOXER. Lisbon, 1959. $9 \times 6\frac{1}{2}$ inches; 360 pages; 6 plates; 1 map.

Professor Boxer begins his preface by apologizing for the fact that this book should have been written by one who is not an economic historian. I have to make the same apology for venturing to write this review, but am encouraged by a remarkable illustration of the well-known adage that 'great minds think alike', since the author's first sentence and mine written 32 years earlier in a book on seventeenth-century rigging are almost word for word the same! At least one critic of that book described my apology as unnecessary and we can say the same of Professor Boxer's. After all, he is one of the very few people with enough of the gift of tongues to have even thought of writing such a book and is at the same time the recognized authority on the doings of the Portuguese and their Dutch rivals in both Asia and America in the sixteenth and seventeenth centuries.

The trade of Macao consisted largely in the export of Chinese silk to Japan and the carriage of Japanese silver on the return voyage. It was made all the more profitable by the difference between the two countries in the relative value of silver and gold. The amount of silver bought in Japan for a given weight of gold could be sold in China for nearly twice as much; the ratio was about 1:6 in China; 1:10 or more in Japan and 1:13 in Europe. At this stage the non-economist tends to get out of his depth, though I have vague memories from my childhood of the formula 1:16 in connexion with the American controversy over bimetallism.

There was also a trade in contraband in the form of Jesuit missionaries. As commercial agents and interpreters these were welcome, but in their religious capacity very much the reverse. In the end, finding it impossible to prevent their entry as long as the trade with Macao continued, the Japanese authorities took the extreme step of prohibiting that trade altogether and emphasizing their decision by the summary execution of almost every member of an embassy sent in 1640 to beg for a reconsideration of the ban. With that the story of the Macao–Japan voyages came to an end.

Professor Boxer unfolds that story year by year in some 150 pages and backs his account with a formidable collection of documents. For the most part these are written in Portuguese and it is suggested 'that economic historians would rather consult them in their original form than be compelled to rely on a translation which they had no means of checking'. I wonder how many economic historians—or indeed historians of any kind—can read seventeenth-century Portuguese with any confidence.

The 'Great Ships' were carracks, but as time went on these proved too slow and unwieldy to escape the attentions of the Dutch and were replaced by a larger number of smaller and handier vessels. We are given two portraits of the heavy type, one by a European artist and one by a Japanese. The first is described as 'circa 1552', but the ship suggests a date at least 60 years later.

The volume ends with an appendix dealing with the multitude of coins, weights and measures in use, an extensive bibliography and a good index. It is very well produced, and though printed in English by Lisbon printers, there are very few misprints.

R. C. ANDERSON

OBITUARY

Many of our members, in particular those who were accustomed to seeing him at Greenwich, will have learnt with regret of the unexpected death of Commander R. D. Merriman, D.S.C., R.I.N., which occurred on 10 July 1960, at Osborne House, where he was convalescent after a recent serious illness. He was 72. Like many another naval officer he had been a pupil at Stubbington House before joining the Mersey cadet training-ship *Conway* in 1903. Unlike his contemporaries in the Royal Navy, however, he had the great advantage of serving in sail for three years before entering the Royal Indian Marine (as it then was) in 1908. He had a good deal of experience in India, Burma and the Persian Gulf, and was River Transport Officer in Mesopotamia in the War of 1914-18. This led to his being besieged in Kut-el-Amara, and when it fell in April 1916 Merriman became a prisoner-of-war in Turkish hands for the next $2\frac{1}{2}$ years. He was awarded the D.S.C. during this time. He commanded H.M.I.S. *Cornwallis* in 1931, and retired in 1938. In the last war he was Naval Control Officer, Karachi.

Merriman was brother-in-law to the late H. H. Brindley, and it is believed that it was owing to this connexion that he became a member of the S.N.R. in 1930. Since then he was a valued and erudite contributor to this *Journal*, besides serving assiduously on the Council for three periods. He had also been a councillor of the Navy Records and Hakluyt Societies. He was a diligent and practised researcher, well known at the Public Record Office and the National Maritime Museum, and his intimate acquaintance with naval affairs in the time of Queen Anne led to his editing the important Sergison Papers for the N.R.S.'s annual volume in 1949. Up to the last he was working hard to leave ready further material on the Navy of Queen Anne for the 1962 volume of the N.R.S. He possessed a wide knowledge of heraldry and genealogy which was always at the disposal of his friends. He was a genial and entertaining companion, always ready with some amusing quotation from his familiar humorous repertory. His death is greatly lamented and is a truly irreplaceable loss to the Society for Nautical Research.

Mrs Harold Wyllie, who died at her home in Dunkeld, Perthshire, last June, was the wife of one of the Society's vice-presidents, Lt.-Col. Harold Wyllie, O.B.E., and was herself a member of the *Foudroyant* Committee. A woman with an outstanding personality, she excelled at everything she

attempted. She was a highly accomplished portrait painter, a clever yachtswoman and a born horsewoman.

Perhaps better known under her maiden name, Hilary Strain, she studied at the Glasgow School of Art and took up portrait painting after gaining her diploma. She exhibited at the Royal Academy, Royal Society of Arts, Lady Artists and Marine Artists, and many other exhibitions. She was elected a member of the Society of Marine Artists.

A great friend of the young, she raised the first Scout Troop in Scotland and helped organize the Girl Guides. In the First World War she was one of the first women to serve as a driver in France with the B.E.F., being awarded the War Medal.

A small woman, of considerable beauty in her youth, she had a highly developed and dry sense of humour. A well-known yachtswoman, she owned and raced a Z-class boat on the Solent and, taking the tiller herself, won many prizes. She made use of her qualities of leadership and knowledge of seamanship by giving a great deal of help on board the *Implacable* and *Foudroyant* training ships when girls were allowed on board for training. Her husband was, of course, in charge of the restoration of the *Implacable*, formerly the 74-gun *Duguay Trouin*, in 1932 and subsequently arranged the vocational training—a forerunner of the Outward Bound syllabus—on board.

After the Second World War Mrs Wyllie again assisted her husband in the fitting out and the training on board the *Foudroyant* and helped organize the raising of funds for the maintenance of the ship.

CORRECTIONS TO VOLUME 46

P. 162. Line 15 from bottom, for 'uncurved' read 'upcurved.'

P. 225. 6th ship name down. Against 'Spy' for 1855 read 1585.

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